Essays in Empirical Corporate Finance

Submitted by Mengyu Wang to the University of Exeter as a thesis for the degree of Doctor of Philosophy in Finance, December 2018

I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

Signature: ……..

Abstract

I investigate how the firm diversification affects the value of large customers and large suppliers, and how the presence of large customers affects corporate payout policy. In Chapter Two, I report the findings that that the value of large customers for shareholders is lower in diversified firms than single-segment firms. I also find that more resources are allocated to a weak segment in a diversified firm when the segment has large customers, and that a diversified firm gives more trade credit to large customers than single-segment firms. Moreover, by using the setting of tariff cut as an exogenous shock, I find that a reduction in the level of large customers is associated with a decrease (an increase) in the value of single-segment firms (diversified firms). Furthermore, I find that the presence of large customers is associated with a higher (lower) announcement return for non-diversifying M&As (diversifying M&As). The results support the hypothesis that firm diversification affects the value of large customers for shareholders through the perspective of bargaining position. Chapter Three examines the relation between firm diversification and the value of large suppliers for shareholders. I find that the value of large suppliers for shareholders is higher in diversified firms than single-segment firms. The presence of large suppliers is positively valued by shareholders in diversified firms through the perspective of relationship-specific investments. In addition, I examine the setting of tariff cut and find that a reduction in the ratio of the purchases made by all suppliers is associated with an increase (a decrease) in the value of single-segment firms (diversified firms). In the event study of M&As, I find that the presence of large suppliers increases both the announcement return and the operating performance of a diversifying M&A. I conclude that the results support the hypothesis that firm diversification affects the value of large suppliers for shareholders through the perspective of relationship-specific investments.

Finally, in Chapter Four, I examine whether large customers affect corporate payout policy. In terms of share repurchases, I find that both the cumulative abnormal return and the net change in operating performance around the announcement of share repurchases are lower with the presence of large customers. In terms of dividends, I find that both the cumulative abnormal return around the announcement of an increase in dividends are higher with the presence of large

customers. In addition, a firm with the presence of large customers prefers to use share repurchases rather than increase dividends. Also, the presence of large customers reduces the level of total payout. I conclude that the presence of large customers has a different value consequence between share repurchases and dividends as two forms of corporate payout policy either through the channel of bargaining position or the channel of relationship-specific investments.

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Acknowledgements

Completion of this doctoral thesis was possible with the support and contribution of my supervisors, colleagues, parents, and friends. I would like to express my sincere gratitude to all of them. They have offered me guidance, suggestions, encouragement, support, and friendship which have made this challenging progress enjoyable.

First, my deep appreciation goes to my supervisors. Dr. Zhenxu Tong has provided continuous research support, valuable suggestions, and consistent encouragement throughout my Ph.D. study. I would not have successfully completed this thesis without his guidance. I appreciate all his contributions of time and ideas to make my Ph.D. experience efficient and stimulating. I am also very grateful to Prof. Pengguo Wang. Due to his patience, motivation, and immense knowledge, I became modest and diligent in my research and in the writing of this thesis.

I would like to thank faculty members in Xfi for their interactions and suggestions at various stages of my Ph.D. study. I am particularly thankful to Claire Levers. As her teaching assistant, I have been able to develop and greatly improve my teaching skills. My sincere thanks also go to Dr. Rajesh Tharyan and Prof. Richard Harris. They have been very encouraging and supportive in my job searching stage.

I am especially grateful to my colleagues in Hope Hall. The group has been a source of friendship as well as good discussion and collaboration. My time at Exeter was also enriched by the badminton club and fitness club. They have made this challenging process much more enjoyable.

Last but not least, I want to express my gratitude to my parents for their unconditional love and care. They have encouraged and supported me at every

stage of my personal and study life. I am indebted to my parents for granting me the wisdom, health and strength to complete this achievement.

Chapter 1. Introduction

This thesis examines how firm diversification affects the value of large customers and large suppliers for shareholders. I also analyse how large customers affect share repurchases and dividend increases as two forms of payout policy.

1.1. Background and Motivation

There is a literature that examines the role of large customers in the corporate finance area including capital structure, dividends, corporate cash holdings, bargaining position, and firm risk. In terms of the role of customers in firms' capital structure, Titman (1984) argues that a firm can commit to reducing the risk of liquidation by choosing a lower leverage in the situation that a firm requires its customers to undertake relationship-specific investments that will lose value if the firm goes into liquidation. Kale and Shahrur (2007) find that a firm's leverage can be affected by its customers because of both the relationship-specific investments and the bargaining power. Furthermore, on the bargaining position between suppliers and customers, Dass, Kale and Nanda (2014) argue that trade credit is associated with a firm's bargaining position. Trade credit increases with the supplier firms' relationship-specific investments and customer firms' market power, but it decreases with supplier firms' bargaining power. Moreover, the presence of large customers is associated with a higher level of risk. Hertzel, Li, Officer and Rodgers (2008) find that distress related to bankruptcy filings of a major customer is associated with negative and significant stock price effects for suppliers.

A growing literature analyses the role of large suppliers in various areas of corporate finance such as capital structure, stock market valuation, trade credit,

seasoned equity offerings, managerial compensation and dividends. In terms of capital structure, a firm can reduce the leverage ratio to maintain the relationship with its large suppliers. The level of debt is positively related to the bargaining power of the firm, and negatively related to the bilateral surplus available for suppliers (Kale and Meneghetti, 2014). For the role of large suppliers in a firm's stock valuation, Menzly and Ozbas (2010) argue that the returns of related suppliers and customers can be cross predicted by each other's stocks. Moreover, the previous literature examines the effects of large suppliers on trade credit. For example, Fabbri and Klapper (2016) find a negative relation between suppliers' bargaining position and the extent of trade credit. Suppliers with weaker bargaining power over their customers have a greater propensity to offer trade credit including an extended payment period and a larger number of goods sold on credit.

The thesis extends this literature by examining how the firm diversification affect the value of large customers and large suppliers for shareholders. Firm diversification is a prevalent corporate strategy. Berger and Ofek (1995) show that the diversified firms occupy around 32% of the observations in their sample. Given the importance of firm diversification as a corporate structure, I investigate the value consequences of large customers and large suppliers with the presence of firm diversification.

An extensive literature discusses the determinants of firm diversification. Various determinants of firm diversification have been identified in the literature, such as the agency problems, an efficient internal capital market, the coinsurance effect and risk reduction. In terms of agency problems, Shin and Stulz (1998) and Rajan, Servaes and Zingales (2000) argue that diversified firms conduct inefficient cross-subsidization because of the agency problem and that corporate resources are

diverted from the divisions with good investment opportunities to the divisions with poor investment opportunities. In addition, there is a ‘‘more-money’’ effect which exists in diversified firms. This means that firm diversification reduces firms’ credit constraints and bankruptcy risks through the coinsurance effect (Stein, 2002). Lewellen (1971) argues that the coinsurance effect stemming from imperfectly correlated cash flows among different segments reduces the bankruptcy risk of a diversified firm and alleviates a firm’s financial constraints.

Share repurchases and dividends are two forms of corporate payout policy. Both share repurchases and dividend increases signal a firm’s profitable prospects and reduced risk in the future. Wang (2012) only examines the fact that the dividend payout is negatively impacted by a firm’s dependence on customer-supplier relationships because the relationship-specific investments are associated with high financial distress costs. The thesis extends this literature by examining the impact of large customers on share repurchases. It is important to examine share repurchases as an alternative form of corporate payout. Grullon and Michaely (2002) report that 84 percent of firms initiated a repurchase programme and 80 percent of firms repurchased shares in 2000.

A great number of studies have discussed payout policy from various perspectives including the signalling effect, agency theory, and substitution effects. Both share repurchases and dividend increases have signalling effects on future profitability, financial leverage and systematic risks. Vermaelen (1981) suggests that firms with share repurchases experience a permanent increase in their share prices and there is an increase in earnings per share around the repurchase announcement date. Woolridge (1983) finds that positive (negative) dividend change announcements lead to positive (negative) share price changes. The main reason for

the positive relation between dividend announcements and share price changes is the market signalling effect. Moreover, the substitution effect means that firms use dividends and share repurchases at different times by considering for example, their cash flows, level of debt, and financial flexibility. Guay and Harford (2000) show that firms choose dividend payout to distribute relatively permanent cash and choose share repurchases to distribute temporary cash.

1.2. Main Findings

Chapter Two shows that the value of large customers for shareholders is lower in diversified firms than single-segment firms. The results show that more resources are transferred into the weak segment of a diversified firm when the segment has large customers, and that a diversified firm gives more trade credit to large customers. Moreover, by using the setting of tariff cut as an exogenous shock, I find that a reduction in the level of large customers is associated with a decrease (an increase) in the value of single-segment firms (diversified firms). Furthermore, I find that the presence of large customers is associated with a higher (lower) announcement return for non-diversifying M&As (diversifying M&As). The results support the hypothesis that the firm diversification reduces the value of large customers through the perspective of bargaining position.

Chapter Three examines how the firm diversification affects the value of large suppliers for shareholders. I find that the value of large suppliers for shareholders is higher in diversified firms than single-segment firms. I also find that this positive relation is stronger when the size of suppliers is relatively larger, when a diversified firm operates in unrelated industries, and when the suppliers' industry R&D expenses are higher. Moreover, in the setting of tariff cut, I find that a reduction in

the level of large suppliers is associated with an increase (a decrease) in the value of single-segment firms (diversified firms). Furthermore, I find that the presence of large suppliers is associated with a higher announcement return and operating performance for diversifying M&As. I conclude that the results support the hypotheses that firm diversification increases the value of large suppliers through the perspective of relationship-specific investments.

In Chapter Four, I investigate whether large customers affect corporate payout policy. In terms of share repurchases, I find that find that both the cumulative abnormal return and the net change in operating performance around the announcement of share repurchases are lower with the presence of large customers. In terms of dividends, I find that both the cumulative abnormal return and the net change in operating performance around the announcement of an increase in dividends are higher with the presence of large customers. In addition, a firm with the presence of large customers prefer to use share repurchases rather than increase dividends. Also, the presence of large customers reduces the level of total payout. I conclude that the presence of large customers has a different value consequence between share repurchases and dividends as two forms of corporate payout policy either through the channel of bargaining position or the channel of relationship-specific investments.

1.3. Contributions

My thesis makes contributions to four categories of literatures. They are the literatures relating to large customers, large suppliers, firm diversification, and corporate payout policy.

Above all, this thesis makes the following contributions in the literature about large customers. we contribute to the literature on the value of large customers. First, there is a debate in the literature about how large customers affect firm value. On one hand, large customers reduce the firm performance of suppliers by giving pressure to the suppliers to provide concessions. Another branch of literature argues that large customers increase the firm performance of suppliers through collaborations in marketing, information sharing, and the reduction in operating expenses. Chapter Two adds to this debate and shows that firm diversification reduces the value of large customers. Second, I extend the literature that examines the role of large customers in the corporate finance area. Previous literature has examined the role of customers in the setting of capital, dividends, corporate cash holdings, trade credit and so on. I provide evidence on the relation between firm diversification and the value of large customers in Chapter Two. Chapter Four provides more comprehensive evidence on the relation between large customers and the value of corporate payout.

What is more, this thesis makes the following contributions in the literature about large suppliers. First, while the results in Chapter Two support the interpretation that the firm diversification reduces the value of large customers for shareholders, the findings in Chapter Three reveal the opposite results that the firm diversification increases the value of large suppliers for shareholders. The difference in the results between the two chapters implies that the firm diversification has different value consequences for large customers and large suppliers. Moreover, I also identify different channels through which firm diversification affects the value of large customers and large suppliers. Second, I contribute to the literature on the role of large suppliers in corporate finance by studying how firm diversification affects the

value of large suppliers for shareholders. The previous literature has discussed the effects of large suppliers at the firm level. For instance, a number of studies have analysed the role of suppliers in the areas of capital structure, managerial compensation, dividends, stock market valuation, and so on. I move one step forward and extend the examination to the segment level. I therefore extend the literature on non-financial stakeholders in the area of corporate finance by conducting further analysis of firm diversification at the segment level.

Furthermore, this thesis reconciles the different findings in the literature to some extent by disclosing the difference in the value of large customers/suppliers for shareholders under different corporate structure. The results reveal both a positive impact of large customers on firm value for single-segment firms and a negative impact of large customers on firm value for diversified firms. Depending on the different corporate structure, the value of large customers/suppliers for shareholders are different in single-segment firms and diversified firms. To my knowledge, this has not been documented in the literature before.

Last but not least, this thesis makes the following contributions in the literature about payout policy. First, only Wang (2012) examine how the firm's relationships with major customers affect the level of dividend payments. I extend the literature by examining the impact of large customers on both share repurchases and dividend increases. In consideration of signalling effects of corporate payout, my Chapter Four shows that large customers positively affect the value of dividend increases through the relationship-specific investments. I also disclose a different channel through which the large customers are associated with lower value of share repurchases. Second, there are various determinants of the payout policy have been identified in previous literature, including financial resource distributions, agency

problem, signalling effects, tax, executive stock options and so on. My Chapter Four extends the literature by documenting the large customers as a new determinant of corporate payout policy.

1.4. Organisation of the Thesis

This thesis is organised as follows. Chapter Two presents the research on the impact of firm diversification on the value of large customers. Chapter Three reports the research on the effects of firm diversification on the value of large suppliers. Chapter Four shows my research on the relation between large customers and corporate payout policy. Each Chapter has its own introduction, literature review, hypotheses, data and variables, empirical results and a conclusion. Chapter Five concludes the main findings, explains the limitation of my research, and provides information on the potential research in future.

Chapter 2. Firm Diversification and the Value of Large Customers

2.1. Introduction

Various literature examines the role of large customers in the corporate finance area. For example, Titman (1984) argues that a firm can commit to reducing the risk of liquidation by choosing a lower leverage in the situation in which the firm requires its customers to undertake the relationship-specific investments that will lose value if the firm goes into liquidation. Kale and Shahrur (2007) find that a firm's leverage can be affected by its customers because of both the relationship-specific investments and the bargaining power. Besides leverage, more recently other areas in corporate finance have been examined in the literature. For example, Wang (2012) examines the payout policies and suggests that a firm's relationship with its principal customers or suppliers is an important determinant of its shareholders' income. Itzkowitz (2013) finds that as a precaution against the additional operating risk induced by being in an important relationship with a customer, suppliers in such relationships hold more cash on average than suppliers that are not in important relationships.

In this paper, I extend this literature by examining how firm diversification affects the value of large customers for shareholders. Firm diversification is a prevalent phenomenon. For example, Berger and Ofek (1995) find that around 32% of the observations in their sample are from diversified firms.[1] Given the importance of firm diversification as a corporate structure, I examine how the large customers are valued by shareholders with the presence of firm diversification.[2] I develop two

[1] See Berger and Ofek (1995), page 43.

[2] To clarify the research objective related to "large customers" and "firm diversification", I use the measures for the magnitude of customers in this paper instead of the degree of the concentration of

hypotheses from different perspectives. From the perspective of relationship-specific investments, the value of large customers for shareholders is higher in diversified firms than single-segment firms. From the perspective of bargaining position, the value of large customers for shareholders is lower in diversified firms than single-segment firms.

I use a sample of 12677 firms with 110084 firm-year observations with a sample period from 1976 to 2013. I first examine how the level of firm diversifications affects the level of the value of large customers. I use the excess value as documented in Berger and Ofek (1995) as a measure of the firm value. I find that the firm diversification reduces the value of large customers. In terms of the economic magnitude, for diversified firms, the existence of large customers is associated with 0.064 decrease in excess value. I also find that the value of large customers is lower with the presence of firm diversification when the diversity in the investment opportunities across segments is higher.

I conduct further analysis to better understand the lower value of large customers for shareholders in diversified firms. I examine the resource allocation within diversified firms, and find that more resources are allocated to a weak segment in a diversified firm when the segment has large customers. Moreover, I find that the value of large customers is lower in diversified firms with higher diversity in the investment opportunities across segments. In addition, I find that more extended

customers. This follows the stream of the literature which uses the measures for the magnitude of customers (e.g., Fee and Thomas, 2004; Kale and Shahrur, 2007; Banerjee, Dasgupta and Kim, 2008; Hui, Klasa and Yeung, 2012; Huang and Kale, 2017; Liu, Masulis and Stanfield, 2017), instead of the stream of literature which uses the measures for the degree of the concentration of customers (e.g., Patatoukas, 2012; Dhaliwal, Judd, Serfling and Shaikh, 2016). Therefore, the term “firm diversification” in this paper means the classic industrial diversification where a firm operates in different industries and has nothing to do with the diversification in a customer base. To my knowledge, a diversified firm does not necessarily have a more diversified customer base than a single-segment firm, and no previous literature has concluded that the classic industrial diversification is related to a higher or lower degree of concentration of customers.

trade credits are given to large customers in diversified firms than single-segment firms.

Moreover, I conduct the empirical analysis in the setting of tariff cut to mitigate the endogeneity problem. The reduction of tariff for an industry represents an exogenous shock which results in a more competitive environment in the industry (e.g., Fresard, 2010; Valta, 2012; Alimov, 2014), and this can affect the existing customer-supplier relationship (e.g., Liu, Masulis and Stanfield, 2017). I identify the magnitude of tariff reduction in the industry that a large customer belongs to and construct an instrumental variable based on the tariff cut, and use the 2SLS estimation. I find that a reduction in the level of large customers is associated with an increase in excess value for diversified firms.

Furthermore, I get a sample of 7282 mergers and acquisitions (M&As) from 1979 to 2013. I use the announcement return and the net change in ROA as the measures for the change in firm performance. I find that the presence of large customers is associated with a lower announcement return and operating performance for diversifying M&As. I find consistent results after I use the Heckman two-stage estimation to control for the self-selection problem.

I conclude that the results support the bargaining hypothesis that the value of large customers for shareholders is lower in diversified firms than single-segment firms.

My paper makes the following contributions. First, I contribute to the literature on the value of large customers. There is a debate in the literature about how large customers affect firm value. On one hand, a long literature argues that large customers reduce the firm performance of suppliers by giving pressure to the

suppliers to provide concessions (e.g., Galbraith, 1952; Scherer, 1970; Lustgarten, 1975; Klein, Crawford, and Alchian, 1978; Williamson, 1979; Balakrishnan, Linsmeier, and Venkatachalam, 1996). On the other hand, relatively more recent literature argues that large customers increase the firm performance of suppliers through collaborations in marketing, information sharing, reduction in operating expenses, and so on (e.g., Jackson, 1985; Cowley, 1988; Kalwani and Narayandas, 1995; Patatoukas, 2012).

The results in my paper reconcile the different findings in the literature to some extent by disclosing the difference in the value of large customers for shareholders under different corporate structure. My results reveal both a positive impact of large customers on firm value for single-segment firms and a negative impact of large customers on firm value for diversified firms. This provides an explanation for the debate in the literature in terms of why both positive and negative impact of large customers on firm value has been found in the previous research. Namely, depending on the different corporate structure, the value of large customers for shareholders can be either positive for single-segment firms or negative for diversified firms. To my knowledge, this has not been documented in the literature before.

Second, I extend the literature that examines the role of large customers in the corporate finance area. Previous literature has examined the role of customers in the areas of capital structure (e.g., Titman, 1984; Maksimovic and Titman, 1991; Kale and Shahrur, 2007), dividends (e.g., Johnson, Kang, and Yi, 2010; Wang, 2012), corporate cash holdings (Itzkowitz, 2013; Bae and Wang, 2015), seasoned equity offerings (e.g., Johnson, Kang, Masulis, and Yi, 2017), trade credit (Campello and

Gao, 2017; Dhaliwal, Judd, Serfling, and Shaikh, 2016; Dass, Kale, and Nanda, 2014), and so on. My paper extends this literature by examining how firm diversification, as well as its associated coinsurance effect and internal capital market, affects the value of large shareholders for shareholders.

Third, I contribute to the literature on firm diversification by disclosing a new channel, namely large customers as a type of non-financial stakeholders, through which firm diversification affects firm value. While there is a large literature on the value consequence of firm diversification and the various channels through which the value consequence occurs (e.g., Berger and Ofek, 1995; Stein, 1997; Shin and Stulz, 1998; Rajan, Servaes and Zingales, 2000; Campa and Kedia, 2002; Hoechle, Schmid, Walter and Yermack, 2012), there is only limited literature that examines the relation between firm diversification and large customers. To my knowledge, only Hann, Ogneva and Ozbas (2013) examine the impact of firm diversification on the cost of capital and argue that firm diversification reduces the risk stemmed from the defections by important stakeholders such as customers. My paper differs from Hann et al. (2013) in that I take a different perspective. My results reveal that firm diversification affects the value of large customers for shareholders through the bargaining position. This channel has not been documented in previous literature.

Chapter 2 is organized as follows. Section 2 documents the literature. Section 3 develops the hypotheses. Section 4 describes the data and the variables. Section 5 presents the results on the relationship between firm diversification and the value of large customers. Section 6 presents the analysis based on the setting of tariff cut. Section 7 presents the analysis in the setting of M&As. Section 8 conducts robustness checks. Section 9 concludes the paper.

2.2. Literature Review

I review the literature about large customers and firm diversification in this section.

2.2.1 Large Customers

There is an extensive discussion on large customers in previous literature. I mainly review the literature about the effects of large customers on firm value, bargaining power, and firm risks.

2.2.1.1 The role of large customers in corporate finance

First, previous literature has examined the role of customers in firms' capital structure. Titman (1984) finds that liquidation affects the relationship-specific investments which are undertaken by a firm with a particular product. A firm may take into account its customers by taking lower leverage. Maksimovic and Titman (1991) find that a firm's debt capacity maintains a reputation for high quality products and the financial distress may induce the firm to cut down costs and lower the product quality. So, a firm's financial distress and bankruptcy has a negative impact on the relationship with its customers. Kale and Shahrur (2007) examine firms' leverage ratio and the relationship with customers. They find that a lower debt level can be an incentive to make a long-term connection between suppliers and customers and conduct relationship-specific investments. Banerjee, Dasgupta and Kim (2008) further support Titman (1984) and Titman and Wessels (1988). They suggest that the customer–supplier relationships affect the corporate capital structure choice. In particular, there is a relatively lower leverage ratio for the

suppliers in durable goods industries if they have important relationships with principal customers.

Second, the presence of large customers affects the corporate dividends policy, initial public offerings (IPOs) and seasoned equity offerings (SEOs). Wang (2012) find that the relationship with large customers negatively impacts a firm's dividend payments. This is due to the high financial distress costs related to relationship-specific investments. Johnson, Kang, and Yi (2010) suggest that the relationship with large customers plays a certificating role for IPO firms. IPO firms with the presence of large customers experience better operating performance and higher valuation than IPO firms without large customers. Johnson, Kang, Masulis, and Yi (2017) explore how the SEOs affect the market value and the relationship heath of both the issuers and their large customers. They suggest that both the issuer and its large customer have a negative operating performance on SEO announcements, and this is more pronounced if the customer-supplier relationships are crucial.

Besides, corporate cash holdings are also influenced by the presence of large customers. Itzkowitz (2013) argues that as a precaution against the customer-induced risks, suppliers with the presence of large customers hold more cash than suppliers without the presence of large customers. Similarly, Bae and Wang (2015) suggest that relationship-specific investments result in a higher level of cash holdings. The customer-supplier relationship is one of the determinants of corporate cash holdings.

2.2.1.2 The effects of large customers on firm value

There is a debate in the literature about how large customers affect firm value. On one hand, previous literature argues that large customers reduce the firm

performance of suppliers by putting pressure on the suppliers to provide concessions (e.g., Galbraith, 1952A; Scherer, 1970; Porter, 1974; Lustgarten, 1975; Klein, Crawford, and Alchian, 1978; Kalwani and Narayandas, 1995). Large customers have the propensity to require lower product prices, take extra inventory, and exploit trade credit from their dependent suppliers. For example, Galbraith (1952B) and Porter (1974) suggest that in line with the arguments of bargaining power, the customer-base market capitalization is negatively associated with the accounting rates of return. Lustgarten (1975) shows that the customer concentration is negatively associated with a supplier's price cost margin. A high customer concentration reduces the supplier's ability to charge high prices. Kalwani and Narayandas (1995) find that major customers are able to reduce the inventory holding and control costs of manufacturing suppliers in long-term relationships. They suggest that suppliers in long-term relationships have a better performance by reducing their discretionary expenses than others who employ a transactional method in serving their customers.

On the other hand, the more recent literature argues that large customers increase the firm performance of suppliers through, for example, collaborations in marketing, information sharing, and a reduction in operating expenses (e.g., Jackson, 1985; Cowley, 1988; Kalwani and Narayandas, 1995; Patatoukas, 2012). More specifically, the presence of large customers increases the operating performance of a firm both from cross-sectional and time series analyses. Patatoukas (2012) suggests that the customer concentration is positively related to the predict efficiency gains because of the lower operating costs per unit of sales and improved asset utilization. Cen, Dasgupta, and Sen (2015) find the strong relationship with large

customers is a protection against takeovers, and firms choose to strengthen the relationship with large customers and therefore improve their operating performance.

2.2.1.3. Large customers and bargaining power

Brown, Fee, and Thomas (2008) find that leverage buyouts improve a customer firm's bargaining power with suppliers. The suppliers of leverage buyout firms have negative abnormal returns. This is especially significant for the suppliers who have made substantial specific investments in their relationship with the customer firms, as they experience the reductions both on abnormal returns and profit margins at the announcements of downstream leverage buyouts. Similarly, Hennessy and Livdan (2009) also suggest that the debt overhang increases a firm's bargaining power over suppliers. Weak firms choosing a higher level of debt can extract a larger proportion of total surplus.

Raskovich (2003) presents that a buyers' merger will reduce their bargaining power as a large size is not beneficial for a firm in terms of bargaining position. Once the customer has become pivotal to the supplier's production decision, the pivotal customer tends to bargain less aggressively, cover the supplier's costs, and cross-subsidize smaller customers. In contrast, Bhattacharyya and Nain (2010) state that the customer firms' consolidation enhances their bargaining power and worsens the performance of dependent suppliers. In horizontal mergers of customer firms, the dependent suppliers experience a remarkable reduction in both their selling prices and revenues, as the consolidation improves customers' bargaining power.

Moreover, the presence of large customers has a significant effect on the trade credit provided by suppliers. Campello and Gao (2017) find that a more concentrated customer base increases both the number of restrictive covenants and interest rate

spreads in bank loan contracts, and this effect is more pronounced using trade credit between suppliers and customers. Dhaliwal et al., (2016) suggest a positive relationship between the concentration of the customer base and a supplier's financing costs. Also, suppliers experience larger negative abnormal stock returns if they offer more trade credit to their customers. Dass, Kale and Nanda (2014) argue that trade credit is associated with a firm's bargaining power. Trade credit increases with the supplier firms' relationship-specific investments and customer firms' market power but it decreases with supplier firms' bargaining power.

2.2.1.4. The effects of large customers on firm risk

The presence of large customers is associated with a higher level of risk. The Statement of Financial Accounting Standards (SFAS) No.131 states that "…… major customers of an enterprise represent a significant concentration of risk". Itzkowitz (2013) argues that suppliers experience significant loss due to customer-induced risks. For example, customers cannot guarantee that they will continue to buy the products when they are in financial distress, and this results in a sudden loss of operating income for suppliers. Hertzel, Li, Officer and Rodgers (2008) find that distress related to bankruptcy filings of a major customer is associated with negative and significant stock price effects for suppliers. Dhaliwal et al. (2016) find that a more concentrated customer base increases a supplier's risk, which results in a higher cost of equity.

2.2.2. Firm Diversification

There is an extensive literature about firm diversification. I focus on reviewing the literature about the firm diversification and the determinants of diversification value.

2.2.2.1. Firm diversification and firm value

There is a debate regarding the consequence of firm diversification in previous literature. Some researchers argue that the firm diversification reduces firm value, that is, diversification discount. Lang and Stulz (1994) find that there was a negative relationship between firm diversification and Tobin's q in the 1980s. Firms with a poor performance tend to choose to diversify and diversified firms have a relatively lower q ratio than comparable single-segment firms. Berger and Ofek (1995) find the discount value of firm diversification by comparing the actual value of diversified firms and the imputed value as if the segments are operated as single-segment firms in the same industries. The reasons for the diversification discount can be attributed to the overinvestment and cross-subsidization in diversified firms. Servaes (1996) find the firm diversification is not beneficial for firms, which further supports the findings of Lang and Stulz (1994) and Berger and Ofek (1995). Servaes's (1996) reveals a significant diversification discount and a negative relationship between insider ownership and firm diversification during the 1960s. During the 1970s, firms with good insider ownership are the first to diversify and the costs of diversification decrease to zero. The findings of Dos Santos, Errunza, and Miller (2008) show that in the period from 1990 to 2000, acquisitions of foreign business divisions generally does not destroy firm value, but there is a significant diversification discount for the industrial-unrelated cross-border acquisitions.

In contrast, another part of literature argues that firm diversification does not destroy firm value. Compa and Kedia (2002) find that the endogeneity of the diversification decision and the self-selection bias explains the diversification discount. They conclude that diversification does not destroy firm value. Graham,

Lemmon, and Wolf (2002) suggest that firm diversification does not destroy firm value. The value destruction occurs because firms acquire discounted business segments, rather than the diversification reducing the firm value. They also argue that the excess value, which is the measure of diversification value in Berger and Ofek (1995), should be reconsidered as the segment of diversified firms is not comparable to single-segment firms. Glaser and Muller (2010) find that the diversification discount can be partly explained by the book value bias of corporate debt. As firm diversification reduces the level of firm risk, the measures of firm value based on book values of corporate debt undervalue diversified firms relative to undiversified firms. However, there is no diversification discount when they use market value of debt instead of book value of debt to measure the value of diversified firms. Whited (2001) argues that the calculation of the imputed value based on segment q is flawed, and the diversification discount is an artefact of measurement error. Custodio (2014) suggests that the q-based measures of diversification value are biased in the accounting of mergers and acquisitions. The diversification discount can be attributed to the relatively lower q in diversified firms compared with single-segment firms. However, the market-to-sales-based measures eliminate this bias, and the diversification discount can be mitigated after subtracting goodwill from the book value of assets.

2.2.2.2. The determinants for the value of diversification

There is a large section of the literature which discusses the determinants of the value of firm diversification. Stein (2003) documents the importance of paying

attention to the “cross section” when one examines the value of firm diversification.[3] Various determinants of the value of firm diversification have been identified in the literature, such as agency problem, efficient internal capital market, coinsurance effect, risk reduction, and asymmetric information.

In terms of agency problems, Denis, Denis, and Sarin (1997) suggest that agency problems are the cause of value-reducing diversification. The decreased level of diversification is related to financial distress, management turnover, and external treats. Shin and Stulz (1998) and Rajan, Servaes and Zingales (2000) argue that diversified firms conduct inefficient cross-subsidization because of the agency problems and that corporate resources are diverted from the divisions with good investment opportunities to the divisions with poor investment opportunities. Hoechle, Schmid, Walter and Yermack (2012) state that the diversification discount is driven by poor corporate governance. They find the diversification discount can be narrowed when they add governance variables in different models including panel data models, Heckman selection models, and dynamic panel generalized method of moments models. In general, better corporate governance is related to less destruction of firm value.

From the perspective of an efficient internal capital market, Stein (1997) argues that for a given amount of capital, the headquarters of a diversified firm can conduct the winner-picking in a way that more resources are allocated to the divisions with better investment opportunities. Shin and Stulz (1998) find that the investment of one segment is associated with the cash flows of other segments in a diversified firm.

[3] Stein (2003) states that “…… the diversification discount may indeed be a useful measure, but perhaps one should pay less attention to its mean value, and more to its cross-sectional variation”. See Stein (2003), p145.

Thus, an efficient internal capital market creates value for shareholders of diversified firms.

In addition, firm diversification is associated with coinsurance effect, risk reduction and information asymmetry. Lewellen (1971) argues that the coinsurance effect stemming from imperfectly correlated cash flows among different segments reduces the bankruptcy risk of a diversified firm and alleviates a firm's financial constraints. Mansi and Reeb (2002) suggest that firm diversification is insignificantly related to excess firm value, and the diversification discount can be attributed to the risk-reducing effects of diversification. Krishnaswami and Subramaniam (1999) find there is information asymmetry in diversified firms, and the division spin-off improves firm value as it mitigates the asymmetric information problems.

Moreover, a more recent paper links the value of firm diversification with the presence of large customers. Hann, Ogneva and Ozbas (2013) examine the impact of firm diversification on cost of capital through the perspective of customers, and argue that firm diversification reduces the risk stemming from the defection by customers and is associated with a lower cost of capital. Their findings imply that firm diversification is beneficial for shareholders with the presence of large customers. Fee and Thomas (2004) suggest that customers experience negligible stock price reactions at merger announcements and insignificant changes in operating performance after upstream mergers. As a result, taking customers into account, the increased anticompetitive collusion is not a source of gains for the mergers.

2.3. Hypotheses

I develop the hypotheses in this section.

2.3.1. Relationship-Specific Investments

Bankruptcy risk affects the relationship-specific investments undertaken by customers and suppliers. For example, Titman (1984) argues that a firm can commit to reducing the risk of liquidation by choosing lower leverage in the situation that the firm requires its customers to undertake the relationship-specific investments that will lose value if the firm goes into liquidation. Titman and Wessels (1988) find that firms that can potentially impose high costs on their customers in the event of liquidation tend to choose lower debt ratios. Kale and Shahrur (2007) find that a firm's leverage is negatively related to the R&D intensities of its customers.

Given the importance of the bankruptcy risk in the setting of the relationship-specific investments, firm diversification can have an impact through the channel of reduction in bankruptcy risk. For example, Lewellen (1971) argues that the coinsurance effect stemmed from imperfectly correlated cash flows among different segments reduces the bankruptcy risk of a diversified firm and alleviates a firm's financial constraints. Since firm diversification reduces the bankruptcy risk, more relationship-specific investments will be motivated to be taken on between a diversified firm and its large customers. This channel is not available for single-segment firms. Therefore, I expect that this is beneficial for shareholders of diversified firms. I have the following hypothesis.

Hypothesis 1: The value of large customers for shareholders is higher in diversified firms than single-segment firms.

2.3.2. Bargaining Position

Previous findings in a long literature reveal that large customers reduce the firm performance of their suppliers by giving pressure to the suppliers to provide concessions such as lower price, extended trade credit and so on (e.g., Galbraith, 1952; Scherer, 1970; Lustgarten, 1975; Klein, Crawford, and Alchian, 1978; Williamson, 1979; Balakrishnan, Linsmeier, and Venkatachalam, 1996). A related literature on the bargaining between customers and suppliers examines the role of firm surplus available for sharing in the bargaining. For example, Kale and Shahrur (2007) develop their hypothesis based on the intuition in Bronars and Deere (1991)4 that higher leverage increases a firm's bargaining position with labor union by reducing the amount of firm surplus available for sharing with labor, and find a positive relation between firm debt level and the degree of concentration in customer industries.

Given the role of firm surplus in the bargaining between a firm and its large customers, firm diversification weakens a firm's bargaining position through two channels by increasing the firm surplus available to make concessions to large customers through two channels. First, since the coinsurance effect alleviates a diversified firm's financial constraints (e.g., Lewellen, 1971) and is associated with the "more money" effect (Stein, 2003), this increases the potential resources available to be extracted by large customers. Consequently, large customers may demand more concessions from diversified firms than single-segment firms.

Second, since previous findings in the literature reveal that the transfer of resources among different segments can take place within a diversified firm (e.g.,

[4] See Kale and Shahrur (2007), p322 and p326.

Shin and Stulz 1998; Rajan, Servaes and Zingales, 2000; Stein, 1997), this may increase the potential resources available to be extracted by large customers because a diversified firm may transfer the resources from a segment without large customers to a segment with large customers when the diversified firm is under pressure to give concessions. Consequently, large customers may demand more concessions from diversified firms than single-segment firms.

These two channels are not available for single-segment firms. Therefore, I expect that such kind of weakening in bargaining position is not beneficial for shareholders of diversified firms. I have the following hypothesis.

Hypothesis 2: The value of large customers for shareholders is lower in diversified firms than single-segment firms.

2.3.3. Summarizing the Hypotheses

The above three hypotheses are not mutually exclusive. I empirically examine which are most important to explain how firm diversification affect the value of large customers. I combine the above three hypotheses into the following table.

The impact of firm diversification on the value of large customers	
Relationship-specific investments	Bargaining position
+	–

This table summarizes the predictions of the three hypotheses. A plus (minus) sign indicates a positive (negative) impact of firm diversification on the value of large customers.

2.4. Data and Variables

In this section, I describe the data and variables.

2.4.1. Data Sources

I obtain the data from the following sources. I collect the firm-level data from the Compustat Annual database and the segment data from the Compustat Historical Segments database. I obtain the data on large customers from Compustat Customer Segments database. I get the stock return data from CRSP. I use the tariff data in Fresard and Valta (2016).[5] I obtain the data on mergers and acquisitions from Thomson One Banker database.

The sample period is from 1976 to 2013. I use the following screening procedures. I exclude financial firms (SIC 6000-6999) as well as firms with financial segments. I also exclude firms with sales less than $20 million. I follow Berger and Ofek (1995) and require that the sum of segment sales must be within 1% of the firm sales. I exclude the observations with incomplete data. After the screening procedures, I obtain a final sample of 12677 firms with 110084 firm-year observations. Among them, diversified firms have 34481 firm-year observations, and single-segment firms have 75603 firm-year observations.

2.4.2. Data on Large Customers

As Financial Accounting Standards Board (FASB) No.14 requires firms to report their important customers which account for over 10% of total annual sales, the Compustat Customer Segments database provides the data on these customers as

[5] The data was available on the webpage of Philip Valta: http://www.valta.ch/ when I wrote the first draft paper. Fresard and Valta (2016) construct the tariff data based on Fresard (2010), Feenstra (1996), Feenstra, Romalis, and Schott (2002), and Schott (2010).

well as the segments responsible for the sales to these customers. However, only the names of customers are provided in the Compustat Customer Segments database, and they are generally listed as abbreviations instead of full names. I match the names of customers with firm identifiers in the Compustat Annual database by hand. I link the abbreviations of customer names with their original names by using an algorithm in which I first check the order and number of letters in the abbreviation and then identify the most likely corresponding full names in the Compustat Annual database.

For example, the abbreviation of the name of a customer is shown as “GEN MTR” in Compustat Customer Segments database. I use the above algorithm and find that it corresponds to the General Motors Co. in Compustat Annual database. For another example, “ALA PWR” in the Customer Segments database corresponds to the Alabama Power Co. in the Compustat Annual database. However, for those abbreviations which are ambiguous and cannot be precisely linked with the full names of any firm in Compustat, I exclude these observations from my sample.

2.4.3. Variables

I describe the variables in this section.

2.4.3.1. Excess value

I follow Berger and Ofek (1995) and use Excess Value as a measure of the firm value. For single-segment firms, Excess Value equals the percentage difference between a firm’s actual value and the median valuation ratio in the same industry. For diversified firms, this measure compares a firm’s actual market value with an imputed value as if its segments were operated as single-segment firms. The

imputed value for each segment is calculated by multiplying the segment's sales by the median ratio of the market value to sales for single-segment firms in the same industry.[6] The imputed value of the firm is the sum of the imputed value for each segment. Excess Value equals the percentage difference between a firm's total value and its imputed value. I provide more details on the calculation of Excess Value in Appendix A1.

2.4.3.2. The Measures of large customers

I use three measures for large customers. First, I construct a dummy variable called Large Customer, which equals one if a firm has at least one large customer which account for over 10% of the firm's total annual sales, and equals zero otherwise. Second, I construct a variable called Top Large Customer, which is the ratio of the purchases made by the top large customer to the total sales of the firm. Third, I construct a variable called All Large Customers, which is the ratio of the purchases made by all large customers to the total sales of the firm.

2.4.3.3. Firm diversification

I use "Firm Diversification" to indicate the status of diversification. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise.

2.4.3.4. Control variables

I follow Campa and Kedia (2002) and use the following control variables. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales.

[6] Custodio (2014) argues that q-based measures of the diversification discount are biased upward by mergers and acquisitions and its accounting implications, and that market-to-sales-based measures do not have this bias.

CAPX/SALES is the ratio of capital expenditures to total sales. Leverage is the ratio of long-term debts to assets. The variable S&P is a dummy variable that equals one when the firm is part of the S&P index and equals zero otherwise. PNDIV is the fraction of all firms in the industry that are diversified firms. PSDIV is the fraction of industry sales accounted for by diversified firms. GDP Growth is the growth rate in real GDP. Contraction is the number of months in a year when the economy is in recession. MAJOREX is a dummy variable that equals one if the firm is listed on Nasdaq, NYSE, or AMEX, and equals zero otherwise. FOREIGN is a dummy variable that equals one if the firm is incorporated outside the United States and equals zero otherwise.

2.5. Results

I report the results in this section. First, I report the univariate analysis of excess value. Next, I examine the relationship between firm diversification and the value of large customers. Then I conduct some initial analysis on the endogeneity problem related to firm diversification.

2.5.1. Univariate Statistics

Table 1.1 shows the univariate statistics. Panel A shows that the mean of the variable Large Customers is 0.0977, indicating that around 9.77% of the firms in my sample have at least one large customer. The mean of the variable Top Large Customer is 0.1933. This means that, on average, the largest customer of a firm accounts for more than 19% of total sales, which indicates the important role of the largest customer. Panel A also shows that the mean of the variable All Large

Customers is 0.2302. Panel B shows the univariate statistics of Excess Value for both diversified firms and single-segment firms. The mean of Excess Value is -0.0923 for diversified firms and the median is -0.1007. The mean of Excess Value is 0.0083 for single-segment firms and the median is 0.0000.[7] The magnitude of Excess Value is consistent with the findings in the literature (e.g., Berger and Ofek, 1995; Hoechle, Schmid, Walter and Yermack, 2012).

2.5.2. Univariate Analysis of Excess Value

Table 1.2 shows the univariate analysis of excess value for diversified firms. I divide the sub-sample of diversified firms into two groups based on the dummy variable Large Customer. Column 1 shows the results for the group of diversified firms with large customers. The mean of Excess Value is -0.1445 and the median is -0.1568. Column 2 shows the results for the group of diversified firms without large customers. The mean of Excess Value is -0.0807, and the median is -0.0927. I conduct the mean test and the median test for the difference. I find that they are significantly different between the two groups. The difference in the mean is -0.0638 (p-value= 0.01) and the difference in the median is -0.0641 (p-value = 0.01). Therefore, the results in Table 1.2 imply that the excess value is lower for the group of diversified firms with large customers. This is consistent with Hypothesis 2.

[7] For single-segment firms, Excess Value equals the percentage difference between a firm's actual value and the median valuation ratio in the same industry. Therefore, the median of Excess Value is zero for single-segment firms by construction. This is consistent with the results in Berger and Ofek (1995). See Berger and Ofek (1995, Table 1.2, page 48).

2.5.3. Firm Diversification and the Value of Large Customers

Table 1.3 shows the regressions[8]. I cluster the standard errors by firm and year in the tables. The dependent variable is Excess Value across all columns. Column 1 shows the regression when I use Large Customers as the measure for large customers. I construct an interaction term Firm Diversification * Large Customers to measure the impact of firm diversification on the value of large customers. I find that the coefficient of Large Customer is 0.022 (p-value=0.01) and the coefficient of the interaction term Firm Diversification * Large Customers is -0.086 (p-value = 0.01). This implies that the value of large customers for shareholders is lower for diversified firms than single-segment firms. For single segment firm, the existence of large customers is associated with 0.022 increase in excess value. However, for diversified firms, the existence of large customers is associated with 0.064 decrease (0.022-0.086= -0.064) in excess value. I conduct an F-test on the sum of the coefficient of Large Customers and the coefficient of the interaction term Firm Diversification * Large Customers, and find that the sum of the coefficients is significant (p-value = 0.01).

I find a similar pattern in Column 2 and Column 3 when I use Top Large Customer and All Large Customers as the measures for large customers. I conduct an F-test on the sum of the coefficient of Top Large Customer and the coefficient of the interaction term Firm Diversification * Top Large Customer, and find that the sum of the coefficients is significant (p-value = 0.01). It implies that a higher level of the

[8] I do not use fixed effect regression in this analysis because there is not a large variation in the status of the presence of large customers over time. I examine my sample and find that only 5.56% of observations involve a change in the status of the dummy variable Large Customers from year t-1 to year t. This implies that there is no change in the status of the presence of large customers over time for nearly 95% of the observations in my sample. Zhou (2001) argues that fixed effect regression is not a proper method when there is not a large variation for the independent variable over time. I have used the year fixed effect in each regression, and the results are consistent.

largest customer is associated with a lower level of Excess Value for diversified firms. I find a similar pattern in Column 3 when the variable All Large Customers is used as the measure for large customers.

Therefore, the results in Table 1.3 support Hypothesis 2 that the value of large customers for shareholders is lower in diversified firms.

2.5.4. Diversity

I conduct further analysis to better understand the results in Table 1.3. I examine the two channels related to the bargaining perspective. First, as stated in Section 3.3, the transfer of resources among different segments can potentially weaken the bargaining position of a diversified firm. Rajan, Servaes, and Zingales (2000) argue that the diversity in the investment opportunities across segments is related to the efficiency of the resource transfer. When the difference in investment opportunities across segments is larger, there will be a more negative impact of the resource transfer from a strong segment to a weak segment. Therefore, I examine how the diversity in the investment opportunities across segments affects the relationship between firm diversification and the value of large customers.

I follow Rajan, Servaes, and Zingales (2000) to construct a variable called Diversity, which is the ratio of the standard deviation of segment asset-weighted q to the equally-weighted average q across segments. A higher level of Diversity indicates a large difference in the investment opportunities across segments. I use the triple interaction terms such as Firm Diversification * Large Customers * Diversity to examine the impact of diversity on the relationship between firm diversification and the value of large customers.

Panel A of Table 1.4 shows the results. The dependent variable is Excess Value across all columns. Column 1 shows the regression when I use the dummy variable Large Customers as the measure for large customers. I find that the coefficient of Large Customers is 0.023 (p-value=0.01) and the coefficient of the interaction term Firm Diversification * Large Customers is -0.063 (p-value = 0.01). The coefficient of the interaction term Firm Diversification * Large Customers * Diversity is -0.179 (p-value = 0.02). The sum of the coefficient of Large Customers and the coefficient of the interaction term Firm Diversification * Large Customers is -0.040 (0.0227+(-0.0633) = -0.041). I conduct an F-test on the sum of the coefficient of Large Customers and the coefficient of the interaction term Firm Diversification * Large Customers, and find that the sum of the coefficients is significant (p-value = 0.01). It implies that a higher level of the largest customer is associated with a lower level of Excess Value for diversified firms with lower diversity. Moreover, the sum of the coefficient of Large Customers, the coefficient of the interaction term Firm Diversification * Large Customers, and the coefficient of triple interaction term Firm Diversification * Large Customers * Diversity is -0.219 (0.023+(-0.063)+(-0.179) = -0.219). I conduct an F-test on the sum of the coefficient of Large Customers, the coefficient of the interaction term Firm Diversification * Large Customers, and the coefficient of triple interaction term Firm Diversification * Large Customers * Diversity. I find that the sum of the coefficients is significant (p-value = 0.01). It implies that the presence of large customers is associated with a lower level of Excess Value for diversified firms with higher diversity.

I find a similar pattern in Column 2 and Column 3 in Table 1.4 when I use Top Large Customer and All Large Customers as the measures for large customers. The results imply that the presence of large customers is associated with a reduction in

the Excess Value when there is diversity in the investment opportunities across segments in a diversified firm, and that such reduction in excess value is larger when there is a higher diversity.

Therefore, the results in Panel A of Table 1.4 support the Hypothesis 2 that the value of large customers for shareholders is lower in diversified firms than single-segment firms.

2.5.5. Unrelatedness

The second channel related to the bargaining perspective is the “more money” effect as stated in Section 3.3. Since the “more money” effect stems from imperfectly correlated cash flows among different segments, I expect that this effect would be stronger for a diversified firm with the segments in the unrelated industries than a diversified firm with all segments in the related industries. I construct a dummy variable called Unrelatedness, which equals one if the segments of a diversified firm do not operate in the same industries, and equals zero otherwise. I examine how the variable Unrelatedness affects the relationship between firm diversification and the value of large customers.

Panel B of Table 1.4 shows the results. The dependent variable is Excess Value across all columns. Column 1 shows the regression when I use the dummy variable Large Customers as the measure for large customers. I find that the coefficient of Large Customer is 0.023 (p-value=0.01) and the coefficient of the interaction term Firm Diversification * Large Customers is -0.065 (p-value = 0.01). The coefficient of the interaction term Firm Diversification * Large Customers * Unrelatedness is -0.008 (p-value = 0.72). This implies that the unrelated diversification does not significantly affect the value of large customers.

I find a similar pattern in Column 2 and Column 3 when I use Top Large Customer and All Large Customers as the measures for large customers. In Column 2, I find that the coefficient of Large Customer is 0.180 (p-value=0.01) and the coefficient of the interaction term Firm Diversification * Large Customers is -0.486 (p-value = 0.01). The coefficient of the triple interaction term Firm Diversification * Top Large Customer * Unrelatedness is insignificant. In Column 3, I find that the coefficient of Large Customer is 0.023 (p-value=0.01) and the coefficient of the interaction term Firm Diversification * Large Customers is -0.063 (p-value = 0.01). The coefficient of the coefficient of the triple interaction term Firm Diversification * All Large Customers * Unrelatedness is insignificant. Therefore, there is no evidence shows that the unrelatedness affects the relationship between firm diversification and the value of large customers. However, as the coefficient of Firm Diversification * Large Customers is significant, the results are still consistent with the interpretation that the value of large customers are lower for diversified firms.

2.5.6. The Efficiency of Resource Transfer within Diversified Firms

To corroborate the results in Panel A of Table 1.4, I examine the efficiency of the transfer of resources among different segments within a diversified firm with the presence of large customers. I follow Rajan, Servaes and Zingales (2000) and use the variable Segment-level Resource Transfer as the measure of the amount of resource transfer within diversified firms. Segment-level Resource Transfer is the difference between the industry-adjusted investment in a segment and the weighted average industry-adjusted investments across all the segments of a firm. More details on the calculation of this measure can be found in Appendix A2. The variable measures the amount of resources transferred into or out of a segment in a

diversified firm. A positive value of variable indicates the net transfer of resources into a segment, and a negative value indicates the net transfer out of a segment.

I also construct the variables to measure the efficiency of resource transfer within diversified firms. Weak Investment Opportunities is a dummy variable which equals one if the segment q is below the firm's average q, and equals zero otherwise. Weak Resource-weighted Investment Opportunities is a dummy variable which equals one if the resources-weighted segment q is below the firm's resources-weighted average q, and equals zero otherwise, where the resources are measured by the segment's beginning-of-year share of total sales. I use these two dummy variables to identify efficient or inefficient transfer of resources within diversified firms.

Table 1.5 shows the results. The dependent variable is Segment-level Resource Transfer. Column 1 shows the regression when I use Weak Investment Opportunities as the measure for the efficiency of resource transfer. The coefficient for Large Customers is -0.004 (p-value =0.01). The coefficient of the interaction term Large Customers * Weak Investment Opportunities and Weak Resource-weighted Investment Opportunities is 0.004 (p-value = 0.01). Column 2 shows the regression when I use Weak Resource-weighted Investment Opportunities as the measure for the efficiency of resource transfer. the coefficient for Large Customers is -0.002 (p-value =0.02). The coefficient of the interaction term Large Customers * Weak Resource-weighted Investment Opportunities is 0.003 (p-value = 0.05). Column 3 shows the regression when I use Weak Investment Opportunities and Weak Resource-weighted Investment Opportunities as the measure for the efficiency of resource transfer. The coefficient for Large Customers is -0.002 (p-value =0.05). The coefficient of the interaction term Large Customers * Weak Investment Opportunities

and Weak Resource-weighted Investment Opportunities is 0.007 (p-value = 0.01). The results imply that for strong segments, they do not worry about the survival of segment, so they transfer the resources out of the strong segment instead to make concession for large customers. For weak segments, they have heavy dependence on large customers for the survival of segment, so they transfer resources into the segment to make concession for large customer.

Therefore, the results in Table 1.5 support the Hypothesis 2 that the value of large customers for shareholders is lower in diversified firms than single-segment firms.

2.5.7. Trade Credit

I conduct further analysis of the perspective of the bargaining position. Extended trade credit has been identified in the literature as an important type of concession made by suppliers to large customers. Fabbri and Klapper (2016) find that firms with weaker bargaining power over their customers have greater propensity to offer trade credit. Chod, Lyandres, and Yang (2018) examine the link between supplier competition and trade credit. They show that a customer will obtain more trade credit if their suppliers operate in a competitive industry. Also, a customer will obtain more trade credit if the product substitutability among their suppliers is higher.

If firm diversification is associated with a weaker bargaining position, I expect that a diversified firm will give more extended trade credit with the presence of large customers. I follow the literature (e.g., Dass, Kale and Nanda, 2014) and use two measures of trade credit based on supplier-customer pairs (i.e., sales of a supplier to specific customers). One measure is called Supplier's Accounts Receivable, which is defined as the log (1+(supplier's accounts receivable)*(fraction of supplier's overall

sales to the customer). A higher level of Suppliers' Account Receivable means a higher level of trade credit provided by supplier. The other measure is called Customer's Accounts Payable, which is defined as (1+ (customer firm's accounts payable) * (supplier's sales to the customer/customer's overall costs of goods sold). A higher level of Customers' Account Payable means a higher level of trade credit demanded by customers.

Table 6 shows the results. In Panel A of Table 6, the dependent variable is Supplier's Accounts Receivable. Column 1 shows that the coefficient of Large Customers is 0.804 (p-value = 0.01). It implies that a single-segment has more accounts receivable with the presence of large customers. Moreover, the coefficient of the interaction term Large Customers * Firm Diversification is 0.049 (p-value = 0.07). It implies that firm diversification is associated with an additional positive impact of large customers on accounts receivable. This is consistent with the bargaining position hypothesis in that a diversified firm gives more concessions to large customers because of the weaker bargaining position. I find a similar pattern in Column 2 and Column 3 in Panel A of Table 6 when I use Top Large Customer and All Large Customers as the measures for large customers.

In Panel B of Table 6, the dependent variable is Customer's Accounts Payable. Column 1 shows that the coefficient of Large Customers is 0.741 (p-value = 0.01). It implies that when a customer is classified as a large customer, it has more accounts payable when its supplier is a single-segment firm. Moreover, the coefficient of the interaction term Large Customers * Firm Diversification is 0.089 (p-value = 0.01). It implies that there is an additional positive impact of the status of a large customer on accounts payable when its supplier is a diversified firm. This is consistent with the

bargaining position hypothesis in that a large customer demands more concessions when its supplier is a diversified firm because of the weaker bargaining position associated with firm diversification. I find a similar pattern in Column 2 and Column 3 in Panel B of Table 6 when I use Top Large Customer and All Large Customers as the measures for large customers. Therefore, the results in both Panel A and Panel B of Table 6 are consistent with Hypothesis 2.

2.6. Tariff Cut

In this section, I examine the potential endogeneity problem by using tariff cut as an instrumental variable. It has been identified in the literature that a tariff cut is associated with an exogenous change in the competitive environment. For example, Fresard (2010) argues that a change in tariff can be regarded as a quasi-natural experiment to isolate the causal effect, and uses the reduction in import tariffs to identify exogenous intensification of competition. Valta (2012) uses the reductions of import tariff rates to capture exogenous changes to a firm's competitive environment. Alimov (2014) makes a similar identifying assumption that firms that experience larger import tariff reductions should be exposed to a greater increase in foreign competition.

Given that a tariff cut is associated with a more competitive environment, this can affect the existing customer-supplier relationship. For example, Liu, Masulis and Stanfield (2017) argue that "Tariff reductions unexpectedly intensify competitive pressures by significantly reducing a customer's switching costs and this raises the probability of a firm losing major customers to a foreign rival". Therefore, I conduct further empirical analysis in the setting of tariff cuts.

2.6.1. Methodology

I use the two-stage least square (2SLS) estimation. I conduct the analysis by using the tariff cut as the identification for the change in large customers. Since the data on large customers are at the segment level and the segment SIC codes are available in the Compustat Segment database, I identify the magnitude of tariff reduction in the industry of the segment that a large customer belongs to. If there is a large tariff reduction in such an industry, it represents an exogenous shock specifically for the segment that a large customer belongs to. The corresponding change in the value of large customers can be better attributable to this exogenous shock, which can mitigate the endogeneity problem and reveal a causal relation.

Regarding the identification for the variable Firm Diversification, I follow Campa and Kedia (2002) and use the estimated probability of operating in multiple segments from a probit model as reported in Column 3 of Table 1.7 as a generated instrument for the diversification status. [9]

I use the following specifications in the empirical analysis.

$$\triangle \text{Excess Value} = a + b_1 * \text{Firm Diversification} + b_2 * \triangle \text{Top Large Customer} + b_3 * (\text{Firm Diversification} * \triangle \text{Top Large Customer}) + \text{Control Variables} + \varepsilon \quad (1)$$

$$\triangle \text{Excess Value} = a + b_1 * \text{Firm Diversification} + b_2 * \triangle \text{All Large Customers} + b_3 * (\text{Firm Diversification} * \triangle \text{All Large Customers}) + \text{Control Variables} + \varepsilon \quad (2)$$

Equation (1) and equation (2) correspond to the empirical analysis that I conduct. Namely, holding constant the level of firm diversification (the item Firm Diversification), I examine how the change in Top Large Customer (the change in All

[9] See Campa and Kedia (2002, p1754) for details on the construction of the instrumental variable.

Large Customers) affects the excess value of diversified firms through the interaction term Firm Diversification * △Top Large Customer (the interaction term Firm Diversification * △All Large Customers).

I use the tariff data in Fresard and Valta (2016), which are the tariff data for the firms in manufacturing industries with the sample period from 1976 to 2005.[10] I construct a dummy variable Tariff Cut which equals one if the percentage reduction of tariff in the industry of the segment that a large customer belongs to is two times higher than its industry median percentage change, and equals zero otherwise. The variable Tariff Cut is used as the instrumental variable for the change in large customers (i.e., △Top Large Customer or △All Large Customers). Correspondingly, the interaction term Firm Diversification * △Top Large Customer (the interaction term Firm Diversification * △All Large Customers) is calculated based on both the instrumented Firm Diversification and the instrumented value of △Top Large Customer (the instrumented value of △All Large Customers).

2.6.2. Results

Table 1.7 shows the first stage of the 2SLS estimation for the variables on the change in large customers. In Column 1, the dependent variable is △Top Large Customer. The independent variable is the instrumental variable Tariff Cut and all exogenous variables to be used in the second stage of the 2SLS estimation. I find that the coefficient of Tariff Cut is -0.003 (p-value = 0.01). This implies that a tariff cut is associated with a reduction in the level of the top large customer. I find similar results in Column 2 where the dependent variable is △All Large Customers. The

[10] The sample period of the data in Fresard and Valta (2016) is from 1974 to 2005. I match the data with my sample starting from 1976.

coefficient of Tariff Cut is -0.004 (p-value = 0.01), implying that a tariff cut is associated with a reduction in the level of all large customers. Column 3 shows a probit model for the diversification status. As stated before, the estimated probability of operating in multiple segments from the probit model is used as a generated instrument for the variable Firm Diversification.

Table 1.8 shows the second stage of the 2SLS estimation. The dependent variable is △Excess Value. In Column 1, the coefficient of △Top Large Customer is 7.265 (p-value = 0.01). It implies that a reduction in the ratio of the purchases made by the largest customer is associated with a reduction in excess value in single-segment firms. Moreover, the coefficient of the interaction term Firm Diversification * △Top Large Customer is -17.759 (p-value = 0.01). The sum of the coefficient of △Top Large Customer and the coefficient of the interaction term Firm Diversification * △Top Large Customer is -10.494 (=7.265 + (-17.759)). I conduct an F-test on the sum of the coefficient of Change in Top Large Customer and the coefficient of the interaction Change in Firm Diversification * △Top Large Customer, and find that the sum of the coefficients is significant (p-value = 0.02). It implies that a reduction in the ratio of the purchases made by the largest customer is associated with an increase in excess value in diversified firms.

In Column 2, The coefficient of △ All Large Customers is 6.190 (p-value = 0.01). It implies that a reduction in the ratio of the purchases made by all large customers is associated with a reduction in excess value in single-segment firms. Moreover, the coefficient of the interaction term Firm Diversification * △ All Large Customer is -10.813 (p-value = 0.02). The sum of the coefficient of △ All Large Customer and the coefficient of the interaction term Firm Diversification * △ All Large Customer is -

6.487 (=6.826 + (-13.313)). I conduct an F-test on the sum of the coefficient of △ All Large Customers and the coefficient of the interaction Firm Diversification * △ All Large Customer, and find that the sum of the coefficients is significant (p-value = 0.05). It implies that a reduction in the ratio of the purchases made by all large customers is associated with an increase in excess value in diversified firms.

Therefore, the results in Table 1.7 and Table 1.8 are consistent with the Hypothesis 2. I find similar results after I control for the endogeneity problem by using the setting of the tariff cut.

2.7. Event Study of M&As

I have so far used Excess Value as the measure of firm value. However, it has been argued in the literature that there are limitations associated with this measure. For example, Graham, Lemmon and Wolf (2002) argue that a segment of diversified firms is not comparable to single-segment firms. Whited (2001) argues that the calculation of the imputed value based on segment q is flawed because of the measurement error. In this section, I examine how large customers affect the performance of diversifying M&As. By using the event study, I use different measures for the performance in the setting of M&As. Therefore, I can mitigate the critique on Excess Value, and provide additional empirical evidence from a different perspective.

2.7.1. Data

I obtain the U.S. data on merger and acquisitions from the Thomson One database. The sample period is from 1979 to 2013.[11] I chose the M&As whose Form of the Deal are recorded as “Mergers” or “Acquisition of Majority Interest” in the database. I also require that the public status of the acquirer is “Public” and that the deal status is “Completed”. I match the sample of M&As with the large sample used in the Section 5, and exclude the observations with incomplete data. After the screening procedure, I obtain a final sample of 7282 M&A events.

2.7.2. Variables

I use the following variables in the setting of M&As.

2.7.2.1. Announcement return

I use an acquirer’s announcement return, which is calculated as the cumulative abnormal return over days (-1, +1) around the announcement date, as a measure of the stock market performance of M&As. The cumulative abnormal return is calculated using the market model with the CRSP equally weighted index as the market return. To estimate the market model, I use an acquirer’s daily return and the return on the CRSP equally weighted index over days -200 to -20, where day 0 is the event date.

2.7.2.2. Net change in operating performance

I use the net change in ROA as a measure of the operating performance of M&As. ROA is the ratio of EBIT to non-cash assets. I calculate the Change in ROA from

[11] The data on M&As starts from 1979 in the Thomson One database.

year t-1 to year t+1. Net Change in ROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to year t+1. I construct a sample of comparable firms with propensity score matching. I match each acquirer firm to a non-acquirer firm requiring that the non-acquirer firm has a minimum difference in propensity score based on firm size, market-to-book ratio, capital expenditure, leverage, cash flow, R&D, dividends and sales growth. I also match each acquirer firm to a non-acquiring firm within the same industry based on a two-digit SIC code by using the similar criteria on propensity score as a robustness check. Details about the propensity score matching are given in Appendix B.

2.7.2.3. Diversifying M&As

I construct a variable called Diversifying M&As to identify whether an M&A increases the degree of firm diversification. Diversifying M&As is a dummy variable that equals one if both conditions are met: (1) the acquirer's main two-digit SIC code is different from the target's main two-digit SIC code, and (2) the acquirer's Herfindahl index calculated based on segment sales at year t+1 is smaller than the acquirer's Herfindahl index calculated based on segment sales at year t-1, and equals zero otherwise.

2.7.2.4. Presence of large customers

I construct a variable called Presence of Large Customers to identify whether or not the combined firm after M&As has at least one large customer. Presence of Large Customers is a dummy variable that equals one if there exists at least one large customer in the combined firm after M&As, and that equals zero otherwise.

2.7.2.5. Control variables

I use the following control variables in the regressions. These control variables are commonly used in the literature on M&As. Unfriendly is a dummy variable that equals one if an M&A takes place in an unfriendly way, and equals zero otherwise. Private Target is a dummy variable that equals one if the target is a private firm, and that equals zero otherwise. Cash Payment is a dummy variable that equals one if the method of payment is cash for a deal, and equals zero otherwise. Deal Value is the ratio of deal value to the market capitalization of the acquirer. I also use other control variables such as Size, M/B, Capital Expenditures, and R&D.

2.7.3. Results

2.7.3.1. Univariate statistics

Table 1.9 shows the univariate statistics for the sample of M&A. The mean of CAR between day -1 and day 1 (event day=0) is 0.0069. The average net change in ROA is 0.0006. I can also find that the mean for Diversifying M&As is 0.1313 which implies that approximately 13.13% of events in the sample is diversified M&As. In addition, the mean of the variable Large Customers is 0.1633, which indicates that around 16.33% of the firms in my M&A sample have at least one large customer.

2.7.3.2. Large customers and the value of M&A

Column 1 of Table 1.10 reports the regression about the announcement return. The dependent variable is CAR (-1, +1). I construct an interaction term Diversifying M&As * Presence of Large Customers to measure the impact of large customers on the change in firm value around the diversifying M&As. I find that the coefficient of the Presence of Large Customers is 0.008 (p-value = 0.01). It implies that the

presence of large customers is associated with a higher cumulative abnormal return around the announcement of non-diversifying M&As. The coefficient of the interaction term Diversifying M&As * Presence of Large Customers is -0.011 (p-value = 0.08). The sum of the coefficient of Presence of Large Customers and the coefficient of the interaction term Diversifying M&As * Presence of Large Customers is -0.003 (=0.008 + (-0.011)). I conduct an F-test on the sum of the coefficient of Presence of Large Customers and the coefficient of the interaction term Diversifying M&As * Presence of Large Customers, and find that the sum is not significant (p-value =0.55). The results in Table 1.10 imply that when a firm conducts non-diversifying M&As, shareholders place a higher value on the M&As when there is a large customer. However, when a firm conducts diversifying M&As, the presence of a large customer does not significantly affect shareholders' valuation of M&As. The results are consistent with Hypothesis 2.

Column 1 of Table 1.11 shows the relationship between the change in operating performance and the presence of large customers around the M&As. The dependent variable is Net Change in ROA. Column 1 shows the regression when I get comparable firms by using the propensity score matching based on the entire sample. I find that the coefficient of the Presence of Large Customers is 0.006 (p-value = 0.33). It implies that the presence of large customers is associated with a higher cumulative abnormal return around the announcement of non-diversifying M&As. The coefficient of the interaction term Diversifying M&As * Presence of Large Customers is -0.030 (p-value= 0.07). The sum of the coefficient of Presence of Large Customers and the coefficient of the interaction term Diversifying M&As * Presence of Large Customers is -0.024 (=0.006 + (-0.030)). I conduct an F-test on the sum of the coefficient of Presence of Large Customers and the coefficient of the interaction

term Diversifying M&As * Presence of Large Customers, and find that the sum is insignificant (p-value =0.11). The results in Table 1.10 imply that when a firm conducts non-diversifying M&As, shareholders place a higher value on the M&As when there is a large customer. However, when a firm conducts diversifying M&As, the presence of a large customer does not significantly affect shareholders' valuation of M&As. This implies that the operating performance of a diversifying M&A is lower with the presence of large customers. The results are consistent with Hypothesis 2.

2.7.4. Heckman Two-Stage Estimation

I conduct the robustness check by using the Heckman two-stage estimation to control for the self-selection problem. In the first stage, I estimate a probit model with the dummy variable Diversifying M&As as the dependent variable. The independent variables are the same the independent variables as reported in Column 3 of Table 1.7. The probit model is used to model the likelihood that a firm chooses to conduct diversifying M&As. I calculate the Inverse Mills Ratio based on the estimates in the probit model.

Column 2 of Table 1.10 shows the second stage of Heckman estimation when I include the Inverse Mills Ratio in the regressions about the announcement return. I find that the coefficient of the interaction term Firm Diversification * Large Customers is -0.012 (p-value = 0.07). Column 2 of Table 1.11 shows the second stage of Heckman estimation when I include the Inverse Mills Ratio in the regressions about the change in operating performance. The coefficient of the interaction term Diversifying M&As * Presence of Large Customers is -0.029 (p-value = 0.08).

Therefore, the results in Table 1.10 and Table 1.11 are consistent with the interpretation that both the announcement return and the net change in operating

performance are lower for diversifying M&As with the presence of large customers. They support Hypothesis 2 that the value of large customers for shareholders is lower in diversified firms than single-segment firms.

2.8. Robustness Check

I show the robustness check in this section.

2.8.1. Heckman Two-Stage Estimation and Instrumental Variables Approach

The literature on firm diversification has discussed the potential endogeneity problem (e.g., Campa and Kedia, 2002; Graham, Lemmon and Wolf, 2002). I follow Campa and Kedia (2002) and conduct the robustness check in this section. I use two econometrics methods. First, I use the Heckman two-stage estimation to control for the self-selection problem. Second, I use an instrumental variables approach to examine the underlying causality.

Table 1.12 shows the first stage of the Heckman estimation. I estimate a probit regression. The dependent variable is the dummy variable Firm Diversification. I follow Campa and Kedia (2002) and use the independent variables including the firm-level variables (such as Size, EBIT/SALES, and CAPX/SALES), the industry-level variables (such as the fraction of all firms in the industry that are diversified firms), and the country-level variables (such as real GDP growth, the number of months in a year when the economy was in recession). Then I calculate the Inverse Mills Ratio based on the estimates in the probit regression, and use it in the second stage of Heckman estimation.

Panel A of Table 1.13 shows the second stage of Heckman estimation when I include the Inverse Mills Ratio in the regressions. The results are consistent with those in Table 1.3. For example, Column 1 shows the regression when I use Large Customers as the measure for large customers. The coefficient of the interaction term Firm Diversification * Large Customers is -0.083 (p-value = 0.01). There is a similar pattern in other columns in Panel A of Table 1.13 when I use Top Large Customer and All Large Customers as the measures for large customers.

Panel B of Table 1.13 shows the results of the instrumental variables approach. I follow Campa and Kedia (2002) and use the estimated probability of operating in multiple segments from the probit model as reported in Table 1.12 as a generated instrument for the diversification status. The results are consistent with those in Table 1.3. For example, Column 1 shows the regression when I use Large Customers as the measure for large customers. The coefficient of the interaction term Firm Diversification * Large Customers is -0.110 (p-value = 0.01). I find similar pattern in other columns in the Panel B of Table 1.13 when I use Top Large Customer and All Large Customers as the measures for large customers.

Therefore, there are consistent results in Table 1.13 after I use econometric methods to deal with the potential endogeneity problem.

2.8.2. Alternative Measures for Firm Diversification

This section describes the alternative measures used for the firm diversification to do the robustness checks. The alternative measures are the number of segments and the firm concentration.

2.8.2.1. Number of segments

Comment and Jarrell (1994), Berger and Ofek (1995) and Campa and Kedia (2002) also use the number of segments to measure firm diversification. Table 1.14 shows how the firm diversification affect the value of large customers by using the Number of Segments as a proxy of firm diversification. The variable Number of Segments has negative and significant effects on the excess value, which is the same as the effects of the dummy variable Firm Diversification in Table 1.3. There are also negative and significant effects of the interaction terms (Number of Segments * Large Customers, Number of Segments * Top Large Customer, and Number of Segments * All Large Customers) on the excess value. The results are consistent with Table 1.3 that the value of large customers for shareholders is lower for diversified firms than single-segment firms.

2.8.2.2. Firm concentration

Thomas (2002) use a Herfindahl Index as a proxy for firm diversification. Based on the Herfindahl Index, I construct a variable called Firm Concentration, which indicates the concentration level of a firm operating within its industry segments. The Firm Concentration is calculated as the sum of the squares of each segment's assets as a percentage of the firm's total assets. Firm Concentration equals one for single-segment firms, and less than one for diversified firms. The lower level of firm concentration means the higher level of firm diversification.

Table 1.15 shows how the firm diversification affects the value of large customers by using the Firm Concentration instead of Firm Diversification. The variable Firm Concentration has positive and significant effects on the excess value which is opposite to the effects of the dummy variable Firm Diversification in Table 1.3. There

are also positive and significant effects of the interaction terms (Firm Concentration * Large Customers, Firm Concentration * Top Large Customer, and Firm Concentration * All Large Customers) on the excess value. The results indicate that firm diversification increases the value of large customers when the firm has high level of concentration in its industries. The results support Table 1.3 that the value of large customers for shareholders is lower for diversified firms than single-segment firms.

2.8.3. Alternative Measures for Large Customers

I use four alternative measures for large customers following Hui, Klesa, and Yeung (2012). I use the relative size of customers to the firm as firm-level proxies for the presence of large customers. Relative Size 1 is a ratio of average market value of customer to the market value of the supplier firm. Relative Size 2 is calculated by the average market value of firms in the industries that a customer belongs to divided by the market value of the supplier firm. I use the concentration ratio of customers as an industry-level proxy for the presence of large customers. Concentration 1 is defined as the average of firm's Herfindahl-Hirschman index value in the industries that a customer belongs to. Concentration 2 is the average of the ratio of the market value of customer firm to the average market value of firms in the industries that a customer belongs to.

Table 1.16 shows the impact of firm diversification on the value of large customers by using alternative measures of large customers. The coefficient of the interaction term Firm Diversification*Relative Size 1 is -0.012 (p-value=0.01). Also, the coefficients of the other three interaction terms are negative and significant. Therefore, the results of Table 1.16 support Table 3. I can conclude that the value of

large customers for shareholders is lower for diversified firms than single-segment firms by using alternative measures of large customers.

2.8.4. Bargaining Position and Trade Credit

To further support Table 1.6's results regarding trade credit, I use alternative measures of large customers as the robustness check. Following Hui, Klesa, and Yeung (2012), I use the relative size of customers to the firm as a firm-level proxy for the presence of large customers. Relative Size 1 is the ratio of the average market value of the customer to the market value of the supplier firm. Relative Size 2 is calculated by the average market value of firms in the industries that a customer belongs to divided by the market value of the supplier firm.

Table 1.17 shows the results. In Panel A of Table 1.17, the dependent variable is Supplier's Accounts Receivable. Column 1 shows that the coefficient of the interaction term Firm Diversification * Relative Size 1 is 0.051 (p-value = 0.01). This implies that a diversified firm has more accounts receivable when the relative size of large customers to the firm is higher. There is a similar pattern in Column 2 when I use Relative Size 2 as the measure for large customers. In Panel B of Table 1.17, the dependent variable is Customer's Accounts Payable. Column 1 shows that the coefficient of the interaction term Firm Diversification * Relative Size 1 is 0.051 (p-value = 0.01). This implies that large customers have more accounts payable to the diversified firm when the relative size of large customers to the firm is higher. There is a similar pattern in Column 2 when I use Relative Size 2 as the measure for large customers.

Therefore, the results in Table 1.17 are consistent with the results of Table 6. The results support the interpretation that a diversified firm gives more extended trade credit to large customers due to a weaker bargaining position.

2.8.5. Different Tariff Cut-off Points

I use the two-stage least square (2SLS) estimation in Table 1.7 and Table 1.8. I conduct the analysis by using the tariff cut as the identification for the change in large customers. This section outlines the use of different tariff cut-off points to conduct the robustness check, as shown in Table 1.7 and Table 1.8. Tariff Cut 1.5 (Tariff Cut 2.5 and Tariff Cut 3.0) is a dummy variable which equals one if the percentage reduction of tariff in the industry of the segment that a large customer belongs to is 1.5 (2.5 and 3) times higher than its industry median percentage change.

In Column 1 of Table 1.18, the independent variable is Tariff Cut 1.5, the coefficients for Change in Top Large Customer and Change in All Large Customers are -0.002 (p-value=0.01) and -0.004 (p-value=0.01) respectively. I find consistent results when I use Tariff Cut 2.5 and Tariff Cut 3.0 in Column 2 and Column 3. Therefore, the results of Table 1.18 are robust to the results of Table 1.7. This indicates that the tariff cut reduces the level of purchases made by large customers.

In Column 1 of Table 1.19, the coefficient of the interaction term Firm Diversification * △Top Large Customer is -20.302 (p-value = 0.01) and the coefficient of the interaction term Firm Diversification * △All Large Customer is -11.369 (p-value = 0.02). There are consistent results in the other two columns when I use Tariff Cut 2.5 and Tariff Cut 3.0. Therefore, the results of Table 1.19 are robust to the results of Table 1.8. This implies that holding constant the level of firm diversification, a

reduction in the ratio of the purchases made by large customers is associated with an increase in excess value in diversified firms.

2.9. Conclusion

I examine how firm diversification affects the value of large customers for shareholders. I develop two hypotheses based on bargaining position and relationship-specific investments. I use the excess value as a measure of the firm value, and find that the value of large customers for shareholders is lower in diversified firms than single-segment firms. More specifically, I find that the presence of large customers is associated with a reduction in the Excess Value when there is diversity in the investment opportunities across segments in a diversified firm, and that such reduction in excess value is larger when there is a higher diversity. Moreover, I examine the setting of a tariff cut which brings an exogenous change in the competitive environment, and find that a reduction in the level of large customers is associated with a decrease (an increase) in the value of single-segment firms (diversified firms). Furthermore, I find that both the announcement returns and the net change in ROA for diversifying M&As are lower with the presence of large customers.

I conclude that the results support the hypothesis that the value of large customers for shareholders is lower in diversified firms than single-segment firms through the perspective of bargaining position.

Chapter 3. Firm Diversification and the Value of Large Suppliers

3.1. Introduction

There is a literature that examines the role of large suppliers in various areas of corporate finance such as capital structure, stock market valuation, trade credit, seasoned equity offerings, managerial compensation, and dividends. In terms of capital structure, a firm can reduce the leverage ratio to maintain the relationship with its large suppliers. The level of debt is positively related to the bargaining power of the firm, and negatively related to the bilateral surplus available for suppliers (Kale and Meneghetti, 2014; Titman, 1984; Hennessy and Livdan, 2009). In addition, the performance of large suppliers is associated with the firm's stock valuation. Menzly and Ozbas (2010) argue that the returns of related suppliers and customers can be cross predicted by each other's stocks. Furthermore, there is a negative relation between a supplier's bargaining position and the extent of trade credit (Fabbri and Klapper, 2016). Chod, Lyandres and Yang (2018) show that a customer will obtain more (less) trade credit if its suppliers operate in a competitive (non-competitive) industry. Also, a customer will obtain more (less) trade credit if the product substitutability among its suppliers is higher (lower).

My paper extends this literature by examining how firm diversification affects the value of large customers for shareholders. Firm diversification is a prevalent corporate strategy. For example, Berger and Ofek (1995) show that the diversified firms occupy around 32% of the observations in their sample.[12] Given the importance

[12] See Berger and Ofek (1995), page 43.

of firm diversification as a corporate structure, I investigate how the firm diversification affects the value of large suppliers.

I develop two competing hypotheses from the perspectives of firm surplus and relationship-specific investments. First, given the role of firm surplus in the bargaining between a firm and its large suppliers, firm diversification weakens a firm's bargaining position by increasing the firm's surplus available to make concessions to large suppliers. The Hypothesis 1 is that the value of large suppliers for shareholders is lower in diversified firms than single-segment firms. Second, as firm diversification is linked to a lower possibility of financial distress and bankruptcy risk, a diversified firm has a higher likelihood to engage in relationship-specific investments with its suppliers. The Hypothesis 2 is that the value of large suppliers for shareholders is higher in diversified firms than single-segment firms.

In my sample, there are 12677 firms with 110084 firm-year observations and the sample period is from 1976 to 2013. I first examine how firm diversification affects the value of large suppliers for shareholders. Following Berger and Ofek (1995), I use the excess value to measure the value of firm. I conclude that the value of large suppliers is higher in diversified firms than single-segment firms. In terms of the economic magnitude, a one standard deviation increase in the magnitude of purchases from the largest supplier increases the excess value by 0.27%. Following Campa and Kedia (2002), I use two econometrical methods as the initial analysis to mitigate the endogeneity problem and find consistent results.

I find stronger evidence supporting the hypothesis about relationship-specific investments. I use Supplier Industries R&D to measure the level of relationship-specific investments, and find that the value of diversification is higher with the

presence of large suppliers when the degree of Supplier Industries R&D is higher. I also examine the trade credit between the diversified firm and its large suppliers, and the level of unrelatedness across segments. The results support the hypothesis about relationship-specific investments.

Moreover, I use the setting of a tariff cut to examine the potential endogeneity problem. Tariff reduction is an exogenous shock which brings more competition within the industry (e.g., Fresard, 2010; Valta, 2012; Alimov, 2014). It also affects the customer-supplier relationship (e.g., Liu, Masulis and Stanfield, 2017). I use the 2SLS estimation by constructing an instrumental variable based on the tariff cut. I find that the level of large suppliers is positively related to the level of excess value for diversified firms.

Finally, I obtain a sample of 7282 mergers and acquisitions (M&A) from 1979 to 2013. I use the announcement return and the net change in the ROA as the proxies for the change in firm value. My results show that the presence of large suppliers is associated with a higher announcement return for diversifying M&As. I find consistent results after controlling for the self-selection problem by using the Heckman two-stage method.

I conclude that the results support the hypothesis of relationship-specific investments that the value of large suppliers for shareholders is higher in diversified firms than single-segment firms.

My paper makes the following contributions. First, while the results in the previous Chapter 2 support the interpretation that firm diversification negatively affects the value of large customers for shareholders, the findings in this Chapter 3 reveal the opposite results, namely, that firm diversification increases the value of large

suppliers for shareholders. The difference in the results between the two chapters implies that firm diversification has different effects on the value of large customers and large suppliers for shareholders. Moreover, I also identify different channels through which firm diversification affect the value of large customer and large suppliers. This has not been identified in the previous literature.

Second, I identify a new channel through which the coinsurance effect brought by firm diversification affects the firm value. In the literature of diversification, it has been argued that the coinsurance effect brought by firm diversification affects the firm value through financial constraint (Lewellen, 1971; Dimitrov and Tice, 2006), through the agency problem between shareholders and debtholders (Mansi and Reeb 2002), and through risk reduction (Amihud and Lev, 1981). However, I contribute to the literature on the impact of the coinsurance effect brought by firm diversification on firm value from another perspective, namely the relationship-specific investments, which has not been documented before.

More broadly speaking, I contribute to the literature on firm diversification by disclosing a new channel, namely large suppliers as a type of non-financial stakeholders, through which firm diversification affects firm value. Firm diversification affect the firm value through the “smarter-money” effect (Alchian, 1969; Weston, 1970; Williamson, 1975; Donaldson, 1984), the efficient internal capital market (e.g., Stein, 1997; Shin and Stulz, 1998; Maksimovic and Phillips, 2002; Rajan, Servaes, and Zingales, 2000), the coinsurance effect (e.g., Lewellen, 1971), the risk reduction (e.g., Mansi and Reeb, 2002; Ogneva and Ozbas, 2013), the agency problem (e.g., Denis, Denis, and Sarin, 1997; Amihud and Lev, 1981), and the asymmetric information (e.g., Krishnaswami and Subramaniam, 1999). I contribute to the

literature by documenting how the firm diversification affects the value of large suppliers.

Third, I contribute to the literature on the role of large suppliers in corporate finance by studying the value of large suppliers in diversified firms and single-segment firms. While the previous literature has discussed the effects of large suppliers at the firm level, I move one step forward and extend the examination to the segment level. For instance, a number of studies have analysed the role of suppliers in the area of capital structure (e.g., Titman, 1984; Kale and Shahrur, 2007), managerial compensation (e.g., Kale, Kedia, and Williams, 2013), dividends (e.g., Johnson, Kang, and Yi, 2010; Wang, 2012), stock market valuation (e.g., Menzly and Ozbas, 2010), and seasoned equity offerings (e.g., Johnson, Kang, Masulis, and Yi, 2011)[13]. To my knowledge, the above papers just focus on the examination at the firm level. I therefore extend the literature on non-financial stakeholders in the area of corporate finance by conducting further analysis of firm diversification at the segment level.

This chapter is organized as follows. I review the relevant literature in Section 2. I develop three hypotheses in Section 3. In Section 4, I report the data and variables. I investigate the effects of firm diversification on the value of large suppliers in Section 5. In Section 6, I conduct an analysis on the effect of a tariff cut. In Section 7, I show the results on the analysis of the sample of M&As, and Section 8 shows the robustness checks. Finally, Section 9 concludes this chapter.

[13] See Kale and Meneghetti (2014) for a detailed literature review.

3.2. Literature Review

I review the literature about large suppliers and firm diversification in this section.

3.2.1. The Role of Large Suppliers in Corporate Finance

There is extensive literature which investigates the role of suppliers in the area of corporate finance. Many studies examine the effect of large suppliers from different perspectives such as capital structure, managerial compensation, dividends, stock market valuation and seasoned equity offerings.

First, the presence of large suppliers has a significant effect on corporate capital structure decisions. Kale and Meneghetti (2014) suggest two channels through which large suppliers affect a firm's capital structure decisions, and they are leverage and bargaining position. The increased level of leverage reduces the firm's surplus available to its suppliers, and therefore enhances the firm's relative bargaining position with suppliers. Titman (1984) finds that the capital structure is serves as a bonding mechanism or pre-positioning in the relationship between the firm and its suppliers. Firms can reduce the likelihood of liquidation by holding lower leverage to maintain the relationship with their large suppliers. Hennessy and Livdan (2009) find that a firm's optimal leverage is relates to the relationship with its large suppliers. The level of debt is positively related to the bargaining power of the firm, and negatively related to the bilateral surplus available for suppliers. They predict that firms tend to keep a higher leverage ratio in order to maintain a higher bargaining position relative to their large suppliers.

Second, the presence of large suppliers has effects on managerial compensation and corporate dividend policy. Kale, Kedia, and Williams (2013) show that managers

may undertake excessive risks if they obtain a higher proportion of high-power incentives such as stock options in their compensation package. The excessive risks undertaken by CEOs may increase the likelihood of financial distress for the firm. This lowers large supplier's incentive to making relationship-specific investments. In terms of corporate dividend policy, Wang (2012) finds that a firm's relationship with its principal customers or suppliers is an important determinant of its shareholders' income. For sustaining a long-term customer-supplier relationship, firms tend to maintain a higher level of liquid assets, but the higher level of liquidity will lower a firm's incentive to pay regular dividends.

Third, the performance of large suppliers is associated with a firm's stock valuation and financing decisions. Menzly and Ozbas (2010) show that the cash flows of suppliers and customers are correlated because they are related to each other either directly through their trading interactions or indirectly through market valuations for their inputs and outputs. Therefore, the returns of related suppliers and customers can be cross predicted by each other's stocks. Johnson, Kang, Masulis, and Yi (2011) suggest that the seasoned equity offering sends a negative signal about the reliability of the firm. They find negative cumulative abnormal returns for both trading partners, and a significant reduction in relationship specific investments and a decline in the duration of the customer-supplier relationship around the announcements of seasoned equity offerings.

Finally, performance of large suppliers is also related to the downstream mergers. Fee and Thomas (2004) find a decline in the operating performance of suppliers which operate in concentrated industries after downstream mergers. They conclude that the customers obtain an increased bargaining power relative to their suppliers

after mergers, as a reduction in the customer's cost of goods sold to sales post-merger leads to a significant decline in the cash flows to sales of its supplier subsequent to a downstream merger.

3.2.2. Hold-up Problems and Bargaining Power

Extensive literature argue that hold-up problems can exist in the supplier-customer relationship. In the situation of large suppliers, a customer can be more concerned about being held up because large suppliers may have stronger bargaining power. Williamson (1975, 1985) develops transaction-costs economics and argues that incomplete contracts and specific relationships are overshadowed by asymmetric information, bounded rationality, and opportunism. This will lead to the vertical integration between suppliers and customers. Gul (2001) and Lau (2008) argue that a customer may invest and increase its valuation of the object before bargaining with its supplier, and the investment made by the customer is sunk-cost at the bargaining stage and will not be compensated by its supplier. For example, a coal mine firm is reliant on the local railroad to provide transport services, or advertising firms are subject to manufacturing firms because they invest marketing expenditure to distribute manufacturing firms' products. Customers must make a sunk investment prior to contracting with large suppliers to input an essential complementary product (Hermalin and Katz, 2009).

Santalo and Berrera (2008) argue that the customer-supplier relationship is more likely to be impacted by hold-up problem if there is small number of customers and suppliers. In addition, vertically integrated firms have lower transaction costs when they deal with industries with only a small number of firms, therefore they have a

stronger competitive advantage than specialised firms in more concentrated industries.

Williams (2011) find that firms with a high capital intensity are more likely to have hold-up problems. There are two methods to mitigate the hold-up problems: making a long-term contract for the customer-supplier relationships and making vertical integration between upstream and downstream firms. Customers and suppliers tend to use contracts if the relationship-specific investment is in the form of an intangible investment. However, firms prefer to be vertically connected if the relationship-specific investment is in the form of a tangible investment.

Martin and Otto (2017) find that the tariff cut in upstream industries increases customers' bargaining power and therefore reduce the hold-up problems. If there is a tariff reduction in upstream industries, customers will increase their investment into suppliers' industries. The effect is more enhanced when the customers are not vertically integrated into the industries that their suppliers belong to, when customers have a weak bargaining position, and when their suppliers produce differentiated products.

Dass et al. (2014) find that the trade credit provided by a firm can increase a supplier's relationship-specific investments and a customer's market power. The trade credit is also affected by the firm's bargaining strength. Fabbri and Klapper (2016) find a negative relation between a supplier's bargaining position and the extent of trade credit. Trade credit is more like a competitive device for suppliers in the product market. Suppliers with weaker bargaining power over their customers have a greater propensity to offer trade credit including an extended payment period and a larger amount of goods sold on credit. Chod, Lyandres and Yang (2018)

examine the link between supplier competition and trade credit. They show that a customer will obtain more (less) trade credit if their suppliers operate in a competitive (non-competitive) industry. Also, a customer will obtain more (less) trade credit if the product substitutability among their suppliers is higher (lower).

3.2.3. Relationship-Specific Investments

There is extant literature which discusses the importance of relationship-specific investments to capital structure, compensation and payout policies, earnings management and accounting policies etc.

Above all, a number of previous studies argue that the possibility of financial distress and the level of bankruptcy risks are the major concerns for a firm which makes a decision about relationship-specific investments and the relationship-specific investments have a significant effect on a firm's capital structure decision. Maksimovic and Titman (1991) show that high leverage reduces suppliers' incentive to make relationship-specific investments, because a high level of debt reduces the firm's credibility to offer high-quality products. Therefore, a firm maintaining a lower leverage, which avoids default and liquidation, will attract suppliers' relationship-specific investments. Kale and Shahrur (2007) examine the effects of a firm's leverage ratio on the customer-supplier relationships. The firm's liquidation decision can significantly impact the relationship-specific investments because it is causally associated with the firm's bankruptcy status. They find that a lower debt level can be an incentive to make a long-term connection between suppliers and customers and conduct relationship-specific investments. Similiarly, Banerjee, Dasgupta, and Kim (2008) find that firms in a bilateral relationship tend to produce unique products. Especially in the durable goods industries, the level of debt is negatively related to

the importance of purchases from dependent suppliers. This is consistent with the argument that a firm tries to reduce the likelihood of bankruptcy in order to attract the relationship-specific investments from suppliers. Chu (2012) shows that the corporate leverage ratio declines with the level of competition in the supplier's industry. The firm's leverage and the competition in the supplier's industry are substitutes, as both of them decrease the supplier's willingness to make relationship-specific investments with the firm and improve the firm's bargaining position. Hennessy and Livdan (2009) show that the higher leverage ratio lowers the surplus available for large suppliers, and reduces the supplier's incentives to make relationship-specific investments with the firm.

Moreover, the relationship-specific investments also affect the CEO's compensation and payout policies. Kale, Kedia and Williams (2013) find that the supplier's relationship-specific investments are negatively related to the risk-taking incentives of the firm's CEOs. The negative relation is more pronounced when the firm has more volatile cash flows. Wang (2012) find that the relationship with suppliers negatively impacts a firm's dividend payments because of the high financial distress costs related to relationship-specific investments. The negative impact is more pronounced when the firm has a higher likelihood of financial distress and when the relationship-specific investments are more important to the firm's operation.

In addition, some of the literature discusses how the relationship-specific investments affect corporate earnings management. Raman and Shahrur (2008) suggest that the industry-level of relationship-specific investments increase with the frequency of large earnings increases, the magnitude of discretionary accruals, and the volatility of earnings. The earnings management adversely affects the duration of

customer-supplier relationships, which means that the duration will be shorter if the degree of earnings management is high.

Finally, a firm's accounting policy is significantly influenced by the relationship-specific investments. Hui, Klasa, and Yeung (2012) find a link between the customer-supplier relationship and a firm's accounting conservatism. They argue that a firm will recognize losses more quickly if its suppliers have a higher bargaining position. The timely recognition of bad news is positively related to the level of the bargaining power of suppliers.

3.2.4. Firm Diversification

This section explores the studies about firm diversification. They are classified as "smarter-money" effect, efficiency of internal capital market, "more-money" effect, and agency problems.

First, the firm diversification is involved with the "smarter-money" effect. The smarter-money effect indicates that the internal capital market of diversified firms may do a better job of allocating capital resources and investments across segments. Alchian (1969), Weston (1970), Williamson (1975) and Donaldson (1984) suggest that a firm's directors are well-informed about the business prospects of each segment, and they have the strong control rights to make value-enhancing resources transfer across segments.

Second, many researchers which debate about the efficiency of the internal capital market within a diversified firm. From the perspective of efficient internal capital market, Stein (1997) argues that for a given amount of capital, the headquarters of a diversified firm can conduct the winner-picking in a way that more

resources are allocated to the divisions with better investment opportunities. Shin and Stulz (1998) find that the investment of one segment is associated with the cash flows of other segments in a diversified firm. Thus, an efficient internal capital market creates value for shareholders of diversified firms. Maksimovic and Phillips (2002) show that the investment and growth of diversified firms are associated with both a firm's segment-level productivity and fundamental industry-level factors. The majority of diversified firms experience growth across industry segments when they behave in a profit-maximizing way. However, diversified firms also have inefficient transfer of resources across segments. Shin and Stulz (1998) and Rajan, Servaes and Zingales (2000) argue that diversified firms conduct inefficient cross-subsidization because of the agency problem and that corporate resources are diverted from the divisions with good investment opportunities to the divisions with poor investment opportunities.

Third, there is a "more-money" effect in the literature about firm diversification. Previous literature documents that firm diversification reduces firms' credit constraints and bankruptcy risks through the coinsurance effect (Stein, 2002). Lewellen (1971) argues that the coinsurance effect stemming from imperfectly correlated cash flows among different segments reduces the bankruptcy risk of a diversified firm and alleviates a firm's financial constraints. Mansi and Reeb (2002) suggest that firm diversification is insignificantly related to the excess firm value, and the diversification discount can be attributed to the risk-reducing effects of diversification. Dimitrov and Tice (2006) show that in the banking industry, the credit constraints are significantly reduced through firm diversification. In a period of economic recession, the diversified firms have higher sales growth rates and inventory growth rates than single-segment firms. Hann, Ogneva and Ozbas (2013) examine the impact of firm diversification on the cost of capital through the

perspective of customers, and argue that firm diversification reduces the risk stemming from the defection by customers and is associated with a lower cost of capital. Hann et al.'s (2013) findings imply that firm diversification is beneficial for shareholders with the presence of large customers.

Furthermore, the value of firm diversification is related to agency problems and information asymmetry. Amihud and Lev (1981) discuss how the structure of corporate ownership affects firm diversification decisions. The agency problems determine the corporate acquisitions and risk strategy. Managers in manager-controlled firms tend to diversify risks, and therefore firms have a higher likelihood of undertaking conglomerate mergers which reduce diversifiable risk. Firm diversification reduces a shareholder's value because of the agency costs which stem from the interest conflicts between shareholders and managers. Similarly, Denis, Denis, and Sarin (1997) report that agency problems are the main reason for firms undertaking value-reducing diversification strategies. The managerial equity ownership negatively impacts on the level of diversification, but the reduced level of diversification is associated with higher managerial controls. In addition, the value of firm diversification is also determined by information asymmetry. Krishnaswami and Subramaniam (1999) find there is information asymmetry in diversified firms, and the division spin-off improves firm value as it mitigates the asymmetric information problems.

3.3. Hypotheses

I develop two hypotheses in this section.

3.3.1. Firm Surplus and Bargaining Position

The related literature on the bargaining between a firm and its suppliers examines the role of firm surplus available for sharing in the bargaining position. For example, Kale and Meneghetti (2014) suggest that the increased level of leverage reduces a firm's surplus available to its suppliers, and therefore enhances the firm's relative bargaining position with suppliers. Titman (1984) finds that firms can reduce the likelihood of liquidation by holding lower leverage to maintain the relationship with their large suppliers. Hennessy and Livdan (2009) find that a firm's optimal leverage is positively related to its bargaining power, and negatively related the bilateral surplus available for suppliers. They predict that firms tend to keep a higher leverage ratio in order to maintain a higher bargaining position relative to their large suppliers.

Given the role of firm surplus in the bargaining between a firm and its large suppliers, firm diversification weakens a firm's bargaining position by increasing the firm's surplus available to make concessions to large suppliers through two channels. First, since the coinsurance effect alleviates a diversified firm's financial constraints (e.g., Lewellen, 1971) and is associated with the "more money" effect (Stein, 2003), this increases the potential resources available to be extracted by large suppliers. Consequently, large suppliers may demand more concessions from diversified firms than single-segment firms through the hold-up problem.

Second, since previous findings in the literature reveal that the transfer of resources among different segments can take place within a diversified firm (e.g., Shin and Stulz 1998; Rajan, Servaes and Zingales, 2000; Stein, 1997), this may increase the potential resources available to be extracted by large suppliers because

a diversified firm may transfer the resources from a segment without large suppliers to a segment with large suppliers when the diversified firm is under pressure to give concessions. Consequently, large suppliers may demand more concessions from diversified firms than single-segment firms though the hold-up problem. I expect that such kind of weakening in the bargaining position is not beneficial for shareholders. Therefore, I have the following hypothesis:

Hypothesis 1: The value of large suppliers for shareholders is lower in diversified firms than single-segment firms.

3.3.2. Relationship-Specific Investments

A firm is more motivated to undertake relationship-specific investments when it has large suppliers. The relationship-specific investments are only valuable within the relation between the firm and its supplier. The value of relationship-specific investments is significantly lower outside these two parties' long-term contract (e.g., Kale, Kedia and Williams, 2013; Dass, Kale and Nanda, 2015) A large supplier is more attractive for a firm to engage in the relationship-specific investments than a small supplier, because the fixed costs and transaction costs can be better spread across the larger portion of input from its large supplier.

However, the relationship-specific investments are risky, because the relation-specific investments are only valuable between the firm and its supplier but not beneficial for any other parties. Previous literature shows that the possibility of financial distress and the level of bankruptcy risks are the major concerns for a firm making a decision about relationship-specific investments. For example, Kale, Kedia and Williams (2013) conclude that the value of relationship-specific investments declines with a firm's risky investments and a CEO's risk-taking incentives. Wang

(2012) argues that a firm's dependence on customer-supplier relationships has a negative impact on dividend payments, and the key reason is the high financial distress costs related to relationship-specific investments. In addition, suppliers may be unwilling to engage in a relationship-specific investment with a high levered customer, because the high level of debt reduces a firm's willingness to provide high-quality products and to build its reputation (Maksimovic and Titman, 1991). The firm's liquidation decision can significantly impact the relationship-specific investments because it is causally associated with the firm's bankruptcy status (Kale and Shahrur, 2007).

Firm diversification can affect the customer-supplier relationship-specific investments through their impact on the probability of financial distress and the level of bankruptcy risks. Previous studies indicate that firm diversification can reduce the level of bankruptcy risk. For example, Lewellen (1971) indicates that the coinsurance effect stemming from imperfectly correlated cash flows among segments decreases the bankruptcy risk of a diversified firm and alleviates corporate financial constraints. Dimitrov and Tice (2006) propose that sales growth rates and inventory growth rates decline more for bank-dependent single-segment firms than for rival segments of bank-dependent diversified firms during recessions, and find that firm diversification reduces credit constraints. Mansi and Reeb (2002), and Amihud and Lev (1981) suggest that diversified firms have relatively lower firm risks than single-segment firms because of the imperfectly correlated returns across all segments. Hann et al. (2013) argue that the coinsurance effect across divisions of a diversified firm can reduce systematic risk by avoiding countercyclical deadweight costs.

Given the above literature, I anticipate that a diversified firm has a higher likelihood to engage in relationship-specific investments with its suppliers, because firm diversification is linked to a lower possibility of financial distress and bankruptcy risk. Therefore, I have the following hypothesis:

Hypothesis 2: The value of large suppliers for shareholders is higher in diversified firms than single-segment firms.

3.3.3. Summarizing the Hypotheses

The above three hypotheses are not mutually exclusive. I empirically examine which hypothesis is (or which hypotheses are) most precise to explain how firm diversification affects the value of large suppliers. The predictions of the hypotheses are summarized in the following table. A plus (minus) sign indicates a positive (negative) impact of firm diversification on the value of large suppliers.

The impact of firm diversification on the value of large suppliers	
Firm surplus	Relationship-specific investments
–	+

3.4. Data and Variables

In this section, I describe the data and variables.

3.4.1. Data Sources

The data are obtained from the following sources. I get the firm-level data from the Compustat Annual database and the segment-level data from the Compustat Historical Segments database. I construct the measures of large suppliers based on the data from Compustat Customer Segments database. The stock return data are

obtained from CRSP database. I use the tariff data in Valta (2016)[14]. The data on mergers and acquisitions are collected from the Thomson One Banker database.

I collect data for all firms during the periods from 1976 to 2013. I use the following screening procedures. Firms with financial service segments (SIC 6000-6999) are excluded from my sample. I also remove firms with sales less than $20 million. According to Berger and Ofek (1995), I require that the sum of segment sales must be within 1% of the firm's total sales. The observations with incomplete data are removed from this sample. After the screening procedures, the final sample includes 12677 firms and 110084 firm-year observations. In this data sample, single-segment firms have 75603 firm-year observations, and diversified firms have 34481 firm-year observations.

3.4.2. Data on Large Suppliers

I construct the measures of large suppliers based on the data from the Compustat Customer Segments database. According to the requirements of FASB No.14 and SEC Regulation S-K, firms need to disclose their big customers which occupy more than 10% of total sales, assets, or profits of firms. In the Compustat Customer Segments database, I can obtain the sales made by customers, and the abbreviations of customer names instead of full names. In order to get the fundamental information about customers, I link the abbreviations of customers with the original names showed in the Compustat by hand. I firstly check the order and number of letters in the abbreviation, and then match the most likely corresponding full name in Compustat.

[14] The data was available on the webpage of Philip Valta: http://www.valta.ch/ when I wrote the first draft paper. Fresard and Valta (2016) construct the tariff data based on Fresard (2010), Feenstra (1996), Feenstra, Romalis, and Schott (2002), and Schott (2010).

For example, “CABOT MED” is the abbreviation of a customer’s name in the Compustat Customer Segments database. I use the above algorithm and find the corresponding full name of the supplier is “Cabot Medical Corp.” in the entire Compustat database. Another example is “ACCLAIM ENT”, I match the order and number of letters of this abbreviation, and find the customer name “Acclaim Entertainment Inc.” listed in Compustat. However, I remove some observations from my sample, because those observation are ambiguous abbreviations and cannot be precisely matched with the original names in Compustat.

3.4.3. Variables

I provide the description of variables in this section.

3.4.3.1. Excess value

Following Berger and Ofek (1995), I use Excess Value as a proxy of a firm’s value. Excess Value is constructed on the basis of industry-adjusted performance, and it compares the percentage difference between a firm’s total market value and its imputed value. For single-segment firms, Excess Value equals the natural logarithm of the ratio of a firm’s actual value to the median valuation ratio in the same industry. For diversified firms, Excess Value compares a firm’s actual market value with an imputed value as if all of its segments are operated as stand-alone firms. The imputed value of the firm is the sum of the imputed value for each segment. The imputed value for each segment is calculated by multiplying the segment’s sales by the median ratio of the market value to sales for stand-alone

firms in the same industry. [15] The detailed calculation of Excess Value is provided in Appendix A1.

3.4.3.2. The measures for large suppliers

I use two methods to construct the measures of large suppliers. First, I follow the methodology in Hui, Klasa and Yeung (2012), and calculate the ratios of the purchase made by a firm from its suppliers to the firm's cost of goods sold. I use two variables to measure the presence of large suppliers. Top Supplier is defined as the ratio of the purchase made by a firm from its largest supplier to the firm's cost of goods sold. All Suppliers is defined as the ratio of the purchase made by a firm from all its suppliers to the firm's cost of goods sold.

3.4.3.3. Firm diversification

I use Firm Diversification to indicate the status of diversified firms. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise.

3.4.3.4. Control variables

I follow Campa and Kedia (2002) and use the following control variables. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. The variable S&P is a dummy variable that equals one when the firm is part of the S&P index and equals zero otherwise. PNDIV is the fraction of all firms in the industry that are diversified firms. PSDIV is the fraction of industry sales accounted for by diversified firms. GDP Growth is the growth rate in

[15] Custodio (2014) argues that q-based measures of the diversification discount are biased upward by mergers and acquisitions and their accounting implications, and that market-to-sales-based measures do not have this bias.

real GDP. Contraction is the number of months in a year when the economy is in recession. MAJOREX is a dummy variable that equals one if the firm is listed on NYSE, NASDAQ, or AMEX, and equals zero otherwise. FOREIGN is a dummy variable that equals one if the firm is incorporated outside the United States and equals zero otherwise.

3.5. Results

I show the results in this section. Firstly, I describe the univariate analysis of key variables. Secondly, I analyse how the firm diversification impact the value of large suppliers. Thirdly, I conduct some initial tests to address endogeneity problems.

3.5.1. Univariate Statistics

Table 2.1 reports the univariate statistics of key variables. The mean of the variable Top Supplier is 0.0519. This means that the purchase made by a firm from its largest supplier occupies over 5% of the firm's cost of goods sold on average. The mean of the variable All Suppliers is 0.0601, which indicates that the sum of purchases made by the firm from all its suppliers is 6.01% of the firm's cost of goods sold. Panel B reports the univariate statistics of Excess Value for both diversified firms and single-segment firms. The mean of Excess Value is -0.0923 for diversified firms and the median is -0.1007. The mean of Excess Value is 0.0083 for single-segment firms and the median is 0.0000. [16]

[16] As stated in Section 3.3.1, Excess Value is a measure of industry-adjusted performance. For single-segment firms, Excess Value equals the percentage difference between a firm's actual value and the median valuation ratio in the same industry. Therefore, the median of Excess Value is zero for single-segment firms by construction. This is consistent with the results in Berger and Ofek (1995). See Berger and Ofek (1995, Table 2, p48).

3.5.2. Univariate Analysis of Excess Value

Table 2.2 presents the univariate analysis of Excess Value for diversified firms. I divided my sample into two groups. The first column shows the Excess Value for the firms with large suppliers. The mean of Excess Value is 0.0468 and the median is 0.0270. The second column shows the Excess Value for the firms without large suppliers. The mean of Excess Value is -0.0940 and the median is -0.1017. After the mean test and the median test, I find that they are significantly different between the two groups. The difference in the mean is 0.1408 (p-value= 0.03) and the difference in the median is 0.0129 (p-value = 0.01). Therefore, the results in Table 2.2 indicate that the Excess Value is higher for the diversified firms with large suppliers. This is consistent with the prediction of Hypothesis 2.

3.5.3. Firm Diversification and the Value of Large Suppliers

Table 2.3 presents the regressions[17]. I cluster the standard errors by firm and year in the tables. The dependent variable is Excess Value across all columns. Column 1 shows the regression when I use Top Supplier as the proxy for the presence of large suppliers. The coefficient of Top Supplier is 0.002 (p-value = 0.01) and the coefficient of the interaction term Firm Diversification * Top Supplier is 0.068 (p-value = 0.04). I conduct an F-test on the sum of the coefficient Top Supplier and the coefficient of the interaction term Firm Diversification * Top Supplier, and find that the sum of the coefficients is significant (p-value = 0.04). This shows that a higher

[17] I do not use fixed effect regression in this analysis because there is not a large variation in the status of the presence of large customers over time. I examine my sample and find that only 5.56% of observations involve a change in the status of the dummy variable Large Customers from year t-1 to year t. This implies that there is no change in the status of the presence of large customers over time for nearly 95% of the observations in my sample. Zhou (2001) argues that fixed effect regression is not a proper method when there is not a large variation for the independent variable over time. I have used the year fixed effect in each regression, and the results are consistent.

level of the largest supplier is associated with a higher level of Excess Value for diversified firms.

I find a similar pattern in Column 2 when I use All Suppliers as the measure for large suppliers. The coefficient of All Suppliers is 0.001 (p-value = 0.18) The coefficient of the interaction term Firm Diversification * All Suppliers is 0.065 (p-value = 0.04). I conduct an F-test on the sum of the coefficient All Suppliers and the coefficient of the interaction term Firm Diversification * All Suppliers, and find that the sum of the coefficients is significant (p-value = 0.04). This implies that a higher level of large suppliers is associated with a higher level of Excess Value for diversified firms.

Therefore, the results in Table 3 are consistent with the prediction of Hypothesis 2 that large suppliers are positively valued by shareholders of diversified firms.

3.5.4. Trade Credit

I conduct further analysis on the trade credit provided by large suppliers. Banerjee, Dasgupta, and Kim (2004) argue that the purpose of trade credit is to primarily extend financing. Fabbri and Klapper (2016) find a negative relation between a supplier's bargaining position and the extent of trade credit. Suppliers with weaker bargaining power over their customers have greater propensity to offer trade credit. In my thesis, from the perspective of Hypothesis 2, I expect that a diversified firm is less financially constrained and therefore is able to pay more cash and use less trade credit when they purchase from suppliers. Banerjee, Dasgupta, and Kim (2008) argue that the large customers are able to pay for their suppliers more promptly because they value their specific investments on the customer-supplier relationship. Thus, my expectation is that in order to keep a good relationship with its

large supplier, a diversified firm is more likely to use less trade credit (and pay more cash) when it purchases from its large supplier.

I follow Dass, Kale and Nanda (2014) and use two proxies of trade credit on the basis of supplier-customer pairs (i.e., sales of a supplier to specific customers). The first proxy is called Supplier's Accounts Receivable, which is defined as the log (1+(supplier's accounts receivable)*(fraction of supplier's overall sales to the customer). The second proxy is called Customer's Accounts Payable, which is defined as (1+ (customer firm's accounts payable) * (supplier's sales to the customer/customer's overall costs of goods sold).

Table 2.4 shows the results. In Panel A of Table 2.4, the dependent variable is Supplier's Accounts Receivable. Column 1 shows that the coefficient of Top Supplier is 0.150 (p-value = 0.03). It implies that a single-segment firm has more accounts receivable with the presence of suppliers. the coefficient of the interaction term Firm Diversification * Top Supplier is -0.784 (p-value = 0.01). This implies that a large supplier has less accounts receivable when its customer is a diversified firm. I find the similar pattern in Column 2 when I use All Large Suppliers as the measure for large suppliers.

In Panel B of Table 2.4, the dependent variable is Customer's Accounts Payable. Column 1 shows that the coefficient of Top supplier is 0.128 (p-value = 0.01). It implies that a single-segment has more accounts payable with the presence of suppliers. The coefficient of the interaction term Firm Diversification * Top Supplier is -0.541 (p-value = 0.01). This implies that a diversified firm has less accounts payable with the presence of large suppliers. I find a similar pattern in Column 2 when I use All Large Suppliers as the measure for large suppliers.

Therefore, the results in Table 2.4 provide the evidence that a large supplier has less accounts receivable when its customer is a diversified firm, and that a diversified firm has less accounts payable with the presence of large suppliers. The results support the interpretation that the firms receive less trade credit from large suppliers for keeping a good customer-supplier relationship. This supports Hypothesis 2 about the relationship-specific investments.

3.5.5. Relationship-Specific Investments

According to Hypothesis 2, firm diversification increases the value of large suppliers through relationship-specific investments. A diversified firm has a higher likelihood of engaging in relationship-specific investments with its suppliers, because firm diversification is linked to a lower possibility of financial distress and bankruptcy risk. I use Supplier Industries R&D to measure the level of relationship-specific investments. A higher level of supplier industries R&D is a proxy for more relationship-specific investments. Therefore, I examine how the supplier industries R&D affect the relation between firm diversification and the value of large suppliers.

I follow Kale and Shahrur (2007) to construct the variable. Supplier Industries R&D is defined as the weighted mean of each supplier's industry R&D, where the weighting is the ratio of the purchase made from each supplier to the costs of goods sold of the firm (see Appendix A3). The Supplier Industries R&D will be high if the firm purchases a significant amount of goods or services from R&D intensive supplier industries. I use the triple interaction terms such as Firm Diversification * Top Supplier * Supplier Industries R&D to examine the impact of relationship-specific investments.

Table 2.5 presents the results. The dependent variable is Excess Value across all columns. Column 1 shows the regression when I use Top Supplier as the measure for large suppliers. The coefficient of Top Supplier is 0.07 (p-value=0.62). It implies that the presence of large suppliers does not affect the shareholders' valuation for single-segment firms without relationship-specific investments. The coefficient of the interaction term Top Supplier* Supplier Industries R&D is -0.003 (p-value=0.73). I conduct F-test for the sum of the coefficients of Top Supplier and the interaction term Top Supplier * Supplier Industries R&D, and find that the sum of coefficients is insignificant (p-value=0.36). It implies that the presence of large suppliers does not affect the shareholders' valuation for single-segment firms with relationship-specific investments. The coefficient of the interaction term Firm Diversification * Top Supplier is -0.002 (p-value=0.94). I conduct F-test for the sum of the coefficients of Top Supplier and the interaction term Firm Diversification * Top Supplier, and find that the sum of coefficients is insignificant (p-value=0.81). It implies that the presence of large suppliers does not affect the shareholders' valuation for diversified firms without relationship-specific investments. The coefficient of the interaction term Firm Diversification * Top Supplier * Supplier Industries R&D is 1.901 (p-value = 0.01). The sum of the coefficients of Top Supplier, the interaction term Top Supplier* Supplier Industries R&D, the interaction term Firm Diversification * Top Supplier, and the interaction term Firm Diversification * Top Supplier * Supplier Industries R&D is 1.903. I conduct F-test and find the sum of four coefficients is significant (p-value=0.08). It implies that the presence of large suppliers is positively valued by shareholders in diversified firms with relationship-specific investments.

I find a similar pattern in Column 2 when I use All Suppliers as the measure for large suppliers. Therefore, the results in Table 2.5 imply that the presence of large

suppliers is positively valued by shareholders in diversified firms with relationship-specific investments. They support Hypothesis 2 that the value of large suppliers for shareholders is higher in diversified firms through the relationship-specific investments.

3.5.6. Unrelatedness

I also examine Hypothesis 2 from the perspective of the level of firm diversification. I propose that the higher level of unrelatedness across segments is associated with a higher level of firm diversification. From the perspective of Hypothesis 2, I expect that firm diversification increases firm value through the relationship-specific investments, and this effect is stronger if the diversified firms have a higher level of unrelatedness. The reason is that the coinsurance effect is stronger in unrelated diversification, and the higher level of coinsurance effect is associated with a lower level of bankruptcy risks.

I construct the variable Unrelatedness to measure the level of firm diversification. Unrelatedness is a dummy variable which equals one if the segments of a diversified firm do not operate in the same industries, and equals zero otherwise. I use a one-digit SIC to classify segments which operate in different industries. I use the triple interaction terms such as Firm Diversification * Top Suppliers * Unrelatedness to examine the effect of firm diversification.

Table 2.6 presents the results. The dependent variable is Excess Value across all columns. Column 1 shows the regression when I use Top Supplier as the measure for large suppliers. I find that the coefficient of Top Supplier is 0.346 (p-value=0.01) and the coefficient of the interaction term Firm Diversification * Top Supplier is -0.699 (p-value = 0.01). The sum of the coefficients of Top Supplier and the interaction term

Firm Diversification * Top Supplier is -0.353 (0.346+ (-0.699) =-0.353). I conduct F-test for the sum of coefficients and I find the sum of coefficients is significant (p-value=0.06). It implies that a higher level of the largest supplier is associated with a lower level of Excess Value for diversified firms which diversified in related industries. The coefficient of the interaction term Firm Diversification * Top Supplier * Unrelatedness is 0.649 (p-value = 0.01). The sum of the coefficients of Top Supplier, the interaction term Firm Diversification * Top Supplier, and the triple interaction term Firm Diversification * Top Supplier * Unrelatedness is 0.296 (0.346+ (-0.699) +0.649 =-0.353). I conduct F-test for the sum of coefficients and I find the sum of coefficients is significant (p-value=0.01). It implies that a higher level of the largest supplier is associated with a higher level of Excess Value for diversified firms which diversified in unrelated industries.

I find a similar pattern in Column 2 when I use All Suppliers as the measures for the firms' suppliers. The results imply that the presence of large suppliers is associated with an increase in the Excess Value when the diversified firm operating in unrelated industries. Therefore, the results in Table 2.6 support the Hypothesis 2 that the value of large suppliers for shareholders is higher in diversified firms.

3.6. Tariff Cut

In this section, I use the setting of a tariff cut as a more powerful method to mitigate the endogeneity problem. A number of studies have used the tariff reduction as an exogenous shock to the degree of the competitiveness of the market. For instance, Fresard (2010) finds that the globalization of economic activities and alleviation of a tariff barrier exacerbate substantial market competition between

domestic firms and foreign producers. Alimov (2014) argues that the tariff cut specified in the Free Trade Agreement between the U.S. and Canada triggers a sudden increase in competitive pressures on a large number of U.S. producers. Valta (2012) argues that the reduction of the tariff rate lowers the costs of importing and increases the amount of foreign goods and services in the domestic market, and this import penetration significantly stimulates competitive pressure faced by domestic firms.

In terms of the impact of tariff reduction on the presence of large suppliers, Martin and Otto (2017) argue that following tariff reductions in the supplier industries, the firms' bargaining position against their domestic suppliers improves because of the lower cost of procuring inputs from alternative foreign suppliers. As a result, the domestic suppliers' ability to hold-up their customers will be reduced after the tariff cut. I therefore use tariff reduction as an exogenous event to check the issue of the endogeneity problem.

3.6.1. Methodology

I conduct the analysis by using the tariff cut as the identification for the change in large suppliers. Since the data on large suppliers are at the segment level and the segment SIC codes are available in the Compustat Segment database, I identify the magnitude of tariff reduction in the industry of the segment that its large suppliers belong to. Suppose there is a large tariff reduction in such an industry, it represents an exogenous shock specifically for the segment that a large customer belongs to. The corresponding change in the excess value can be better attributable to this exogenous shock, which can mitigate the endogeneity problem and reveal a causal relation.

In terms of the identification of the variable Firm Diversification, I follow Compa and Kedia (2002) and use the estimated probability of operating in multiple segments from a probit model as reported in Column 3 of Table 2.9 as a generated instrument for the status of diversification.[18]

I use the following specifications in this empirical analysis.

$$\triangle\text{Excess Value} = a + b_1 * \text{Firm Diversification} + b_2 * \triangle\text{Top Large Supplier} + b_3 * (\text{Firm Diversification} * \triangle\text{Top Large Supplier}) + \text{Control Variables} + \varepsilon \quad (1)$$

$$\triangle\text{Excess Value} = a + b_1 * \text{Firm Diversification} + b_2 * \triangle\text{All Large Suppliers} + b_3 * (\text{Firm Diversification} * \triangle\text{All Large Suppliers}) + \text{Control Variables} + \varepsilon \quad (2)$$

The equation (1) and the equation (2) demonstrate the empirical analysis of the effect of tariff cut. Holding the level of firm diversification (the item Firm Diversification) constant, I analyse how the excess value affected by the change in Top Large Supplier (the change in All Large Suppliers) through the interaction term Firm Diversification * △Top Large Supplier (the interaction term Firm Diversification * △All Large Suppliers).

I use the tariff cut as the identification for the change of large suppliers. Following Fresard and Valta (2016), I use the data of tariff reduction for manufacturing firms with the sample period from 1976 to 2005.[19] I construct a dummy variable Tariff Cut, which equals one if the reduction of tariff rate is 1.5 times higher than the its industry median change, and equals zero otherwise. The two-stage least square (2SLS) is conducted in this analysis. The variable Tariff Cut is used as the instrumental

[18] See Campa and Kedia (2002, p1754) for details on the construction of the instrumental variables.
[19] The sample period of the tariff date in Fresard and Valta (2016) is between 1974 and 2005. I match the data with my sample staring from 1976.

variable for the change in large suppliers (i.e., △Top Large Supplier or △All Large Suppliers). Accordingly, the interaction term Firm Diversification * △Top Large Supplier (the interaction term Firm Diversification * △All Large Suppliers) is calculated by the instrumented Firm Diversification and the instrumented value of △Top Large Supplier (the instrumented value of △All Large Suppliers).

3.6.2. Results

Table 2.7 presents the first stage of the 2SLS estimation for the variables on the change in large suppliers. The independent variables are the instrumental variable Tariff Cut and all exogenous variables which are used in the second stage of the 2SLS estimation. In Column 1, the dependent variable is △Top Large Supplier. I find that the coefficient of Tariff Cut is -0.046 (p-value = 0.01). I find similar results in Column 2 where the dependent variable is △All Large Suppliers. The coefficient of Tariff Cut is -0.036 (p-value = 0.01). The results indicate that a tariff cut reduces the amount of inputs from a firm's largest supplier and from all its suppliers. Therefore, the results of Table 2.7 support the interpretation that a tariff cut reduces the dominance of large suppliers, as the tariff cut increase the presence of foreign goods and services and the competitive pressure on domestic suppliers.

Table 2.8 presents the second stage of the 2SLS estimation. The dependent variable is the Change of Excess Value. In Column 1, In Column 1, the coefficient of △Top Supplier is -6.190 (p-value = 0.01). It implies that a reduction in the ratio of the purchases made by the largest supplier is associated with an increase in excess value in single-segment firms. Moreover, the coefficient of the interaction term Firm Diversification * △Top Supplier is 9.966 (p-value = 0.03). The sum of the coefficient of △Top Supplier and the coefficient of the interaction term Firm Diversification *

△Top Supplier is 3.776 ((-6.190) +9.966=3.776). I conduct an F-test on the sum of the coefficient of △Top Supplier and the coefficient of the interaction Change in Firm Diversification * △Top Supplier, and find that the sum of the coefficients is significant (p-value = 0.01). It implies that a reduction in the ratio of the purchases made by the largest supplier is associated with a decrease in excess value of diversified firms.

In Column 2, I find similar pattern when I use All Suppliers as the variable of large suppliers. The results indicate that a reduction in the ratio of the purchases made by all suppliers is associated with a decrease in excess value of diversified firms. Therefore, after controlling for the endogeneity problem by using the setting of a tariff cut, I find consistent results in Table 2.7 and Table 2.8 which support my hypotheses 2.

3.7. Event Study of M&As

So far, I have used Excess Value as a measure of firm value. However, it has been debated in previous literature that there are self-selection and data limitations related to the measurement of excess value. For instance, Whited (2001) finds that the calculation of the investment made by segments of a diversified firm based on the Tobin's q of a single-segment firm is deficient because of the measurement error. Graham, Lemmon and Wolf (2002) argue that a division of diversified firms is not comparable to single-segment firms because of selection biases. Villalonga (2004) finds that after using a different database, the value of diversification no longer appears discounted. In this section, I analyse how the presence of large suppliers affect the performance of diversifying M&As. I will use different proxies for the performance in the setting of M&As. By using this event study, I can mitigate the

critique on the measure of firm diversification, and provide additional empirical evidence to further support my analysis.

3.7.1. Data

I collect the U.S. data on merger and acquisitions from the Thomson One database. The sample period is from 1979 to 2013.[20] I select the M&As whose Form of the Deal are recorded as “Mergers” or “Acquisition of Majority Interest” in the database. I also require that the Deal Status is “Completed” and the public status of the acquirer is “Public”. I match the small sample of M&A events with the large sample of excess value, and delete the observations with incomplete variables. I obtain a final sample of 7282 M&A events after the above screening procedure.

3.7.2. Variables

In this section, I describe the key variables used in the event study of M&As.

3.7.2.1. Announcement return

I use an acquirer’s announcement return as a measure of the stock market performance of M&As. This is defined as the cumulative abnormal return over days (-5, +5) around the announcement date. The cumulative abnormal return is defined by using the market model with the CRSP equally weighted index as the market return. To estimate the market model, I use an acquirer’s daily return and the return on the CRSP equally weighted index over days -330 to -20, where day 0 is the event date.

[20] The data on M&As starts from 1979 in the Thomson One database.

3.7.2.2. Net change in operating performance

I use the net change in ROA as a proxy of the operating performance of M&As. ROA is defined as the ratio of EBIT to non-cash assets. I estimate the Change in ROA from year t-1 to year t+1. Net Change in ROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to year t+1. I match each acquirer firm to a non-event firm within the same industry based on two-digit SIC code. Then I select the comparable firms which have the minimum difference in size and market-to-book ratio with the M&A event firms.

3.7.2.3. Diversifying M&As

I define a variable called Diversifying M&As to identify whether or not an M&A raises the degree of firm diversification. I estimate the degree of diversification by using the Herfindahl index which is calculated based on segment sales. Diversifying M&As is a dummy variable which equals one if the acquirer's Herfindahl index at year t+1 is smaller than the acquirer's Herfindahl index at year t-1, and equals zero otherwise.

3.7.2.4. Presence of large suppliers

I define a variable called Presence of Large Suppliers to identify whether the combined firm after M&As has at least one large supplier. Presence of Large Suppliers is a dummy variable that equals one if the combined firm has at least one large supplier after M&As, and equals zero otherwise.

3.7.2.5. Control variables

I follow Hoechle et al. (2012) and use the following control variables in the event study of M&As. Unfriendly is a dummy variable that equals one if an M&A event

proceeds in an unfriendly approach, and equals zero otherwise. Private Target is a dummy variable if the target firm is a private firm, and equals zero otherwise. Cash Payment is a dummy variable that equals one if the payment type is cash for the M&A deal, and equals zero otherwise. Deal Value is defined as the ratio of deal value to the acquirer's market capitalization. This setting also includes other control variables such as Size, Capital Expenditures, M/B, and R&D.

3.7.3. Results

3.7.3.1. Univariate statistics

Table 2.9 shows the univariate statistics for the sample of M&A. The mean of CAR between day -5 and day 5 (event day=0) is 0.0063. The average net change in ROA is -0.0227. I also find that the mean for Diversifying M&As is 0.1690 which implies that approximately 16.90% of events in the sample are diversified M&As. In addition, the mean of the variable Large Suppliers is 0.0271, which indicates that around 2.71% of the firms in the M&A sample have at least one large supplier.

3.7.3.2. Large suppliers and the value of M&A

Table 2.10 presents the regression about the relation between the presence of large suppliers and announcement returns. The dependent variable is CAR (-5, +5). The coefficient of Presence of Large Suppliers is -0.003 (p-vale=0.68). The coefficient of the interaction term Diversifying M&As * Presence of Large Suppliers is 0.041 (p-value = 0.05). The sum of the coefficient of Presence of Large Suppliers and the coefficient of the interaction term Presence of Large Suppliers * Diversifying M&As is 0.038 ((-0.003) +0.041=0.038). the sum of the coefficient of Presence of Large Suppliers and the coefficient of the interaction term Presence of Large Suppliers * Diversifying M&As, and find that the sum is 0.038. I conduct an F-test on

the sum of coefficients and find it is significant (p-value =0.05). It implies that the presence of large suppliers is associated with a significant cumulative abnormal return around the announcement of diversifying M&As. The results are consistent with the interpretation that the presence of large suppliers in the combined firm is positively valued by shareholders for diversifying M&As. Therefore, the results in Table 2.10 are consistent with the prediction of Hypothesis 2 that the value of large suppliers for shareholders is higher in diversified firms.

Table 2.11 presents the relation between the presence of large suppliers and the operating performance around the M&As. The dependent variable is Net Change in ROA. I obtain comparable firms by using the matching based on the same industry as defined by two-digit SIC code, and I select the comparable firms which have the minimum difference in size and market-to-book ratio with the M&A event firms. The coefficient of Presence of Large Suppliers is -0.045 (p-vale=0.01). The coefficient of the interaction term Diversifying M&As * Presence of Large Suppliers is 0.054 (p-value = 0.08). The sum of the coefficient of Presence of Large Suppliers and the coefficient of the interaction term Presence of Large Suppliers * Diversifying M&As is 0.038 (=(-0.045) +0.054). I conduct an F-test on the sum of the coefficient of Presence of Large Suppliers and the coefficient of the interaction term Presence of Large Suppliers * Diversifying M&As, and find that the sum is insignificant (p-value =0.75). It implies that when a firm conducts non-diversifying M&As, shareholders place a lower value on the M&As when there is a large supplier. However, when a firm conducts diversifying M&As, the presence of a large supplier does not significantly affect shareholders' valuation of M&As. The results are consistent with Hypothesis 2 that the value of large suppliers for shareholders is higher in diversified firms.

3.7.3.3. Heckman two-stage estimation

I conduct the Heckman two-stage estimation to control for the self-selection problem as the robustness check. In the first stage, I estimate a probit model with the dummy variable Diversifying M&As as the dependent variable. The independent variables are the same as the independent variables as reported in Column 3 of Table 2.7. The probit model is used to model the likelihood that a firm chooses to conduct diversifying M&As. I calculate the Inverse Mills Ratio based on the estimates in the probit model.

Column 2 of Table 2.10 reports the second stage of the Heckman estimation. I find the similar pattern with Column 1 when I include Inverse Mills Ratio in the regressions about the announcement return. Column 2 of Table 2.11 reports the second stage of the Heckman estimation. I find similar pattern with Column 1 when I include Inverse Mills Ratio in the regressions about the change in operating performance.

Therefore, after conducting the Heckman two-stage estimation to control for the self-selection problem, I find a positive effect of the presence of large suppliers on the firm value of M&As, which is consistent with the prediction of Hypothesis 2.

3.8. Robustness Check

I show the robustness check in this section.

3.8.1. Heckman Two-Stage Estimation and Instrumental Variables Approach

There is a comprehensive discussion about the potential endogeneity problem in the literature about firm diversification (e.g., Graham, Lemmon and Wolf, 2002; Campa and Kedia, 2002; Villalonga, 2004). Following Campa and Kedia (2002), I report on the conducting of the robustness check in this section. I use two econometrics approaches. The first one is the Heckman two-stage estimation to control for the self-selection problem. The second method is the Instrumental Variables approach to examine the underlying causality.

In Table 2.12, I estimate a probit regression as the first stage of the Heckman estimation. The dependent variable is the dummy variable Firm Diversification across all columns. Referring to Campa and Kedia (2002), I implement the independent variables including the firm-level variables (such as Size, EBIT/SALES, CAPX/SALES, and the average values of the variables Size, EBIT/SALES, and CAPX/SALES), the industry-level variables (such as the fraction of all firms in the industry that are diversified firms, and the fraction of industry sales accounted for by diversified firms.), and the national level variables (such as real GDP growth, and the number of months in a year when the economy was in recession). On the basis of estimates in the probit regression, I calculate the Inverse Mills Ratio and use it in the second stage of the Heckman estimation.

Panel A of Table 2.13 presents the second stage of the Heckman estimation when I include Inverse Mills Ratio in the regressions. The results are consistent with Table 2.3. In Column 1 of the regression, I use Top Supplier as the measure for the presence of large suppliers. The coefficient of the interaction term Firm Diversification * Top Supplier is 0.071 (p-value = 0.03). Similarly, in Column 2, I use

All Suppliers as the measure for the presence of large suppliers. The coefficient of the interaction term Firm Diversification * All Suppliers is 0.068 (p-value = 0.03). The results are consistent with the interpretation that large suppliers are positively valued by shareholders in diversified firms.

Panel B of Table 2.13 presents the results of instrumental variables as an approach to mitigate the causality problem. I also use the instrumental variable for Firm Diversification which is the same as that mentioned in Section 6.1. In Column 1, I use Top Supplier as the measure for large suppliers. The coefficient of the interaction term Firm Diversification * Top Supplier is 0.122 (p-value = 0.02). In Column 2, the coefficient of the interaction term Firm Diversification * All Suppliers is 0.043 (p-value = 0.01). The results are consistent with the interpretation that the presence of large suppliers is positively valued by shareholders in diversified firms.

Therefore, I find consistent results in Table 2.13 after I use the Heckman two-stage and Instrumental Variables approach to mitigate the potential endogeneity problem.

3.8.2. Number of Segments

Previous literature also use the number of segments to measure firm diversification (Comment and Jarrell,1994; Berger and Ofek, 1995; Campa and Kedia, 2002). In Table 2.14, I analyse how the firm diversification affects the value of large suppliers by using the Number of Segments instead of the dummy variable Firm Diversification in Table 2.3. As I can see from the coefficients of interaction terms (Number of Segments * Large Suppliers, Number of Segments * Top Large Supplier, and Number of Segments * All Large Suppliers), the results are consistent with Table 2.3 that the firm diversification increase the value of large suppliers.

3.9. Conclusion

I examine the relation between firm diversification and the value of large suppliers for shareholders, and find that the value of large suppliers for shareholders is higher in diversified firms. I find robust results to support Hypothesis 2 about the relationship-specific investments. the presence of large suppliers is positively valued by shareholders in diversified firms with relationship-specific investments. In addition, I analyse the impact of tariff cut on the competitive environment find that that a reduction in the ratio of the purchases made by all suppliers is associated with a decrease in excess value of diversified firms. In the event study of M&As, I find that the presence of large suppliers increases both the announcement return and the operating performance of a diversifying M&A.

I conclude that the results support my hypothesis that the value of large suppliers for shareholders is higher in diversified firms through the perspective of relationship-specific investments.

Chapter 4. Large Customers and Payout Policy

4.1. Introduction

Large customers play an important role in the corporate finance area. For example, Titman (1984) and Maksimovic and Titman (1991) find that a firm's financial distress and bankruptcy have a negative impact on the relationship with its customers. A firm can commit to reducing the risk of liquidation by choosing a lower leverage in a situation where the firm is willing to establish specific relationship with its customers. Kale and Shahrur (2007) state that large customers affect a firm's leverage ratio through the channel of relationship-specific investments and bargaining position. Besides leverage, more recently other areas in corporate finance have been analysed in the literature. For example, Wang (2012) shows that the corporate dividend payout is negatively impacted by a firm's dependence on customer-supplier relationships because the relationship-specific investments are associated with high financial distress costs. Hertzel, Li, Officer and Rodgers (2008) find that distress related to the bankruptcy filings of a major customer is associated with negative and significant stock price effects for suppliers as customers impose the indirect costs of distress by shifting purchases to other suppliers.

In my thesis, I extend the literature by examining how large customers as non-financial stakeholders affect the corporate payout policy. Share repurchases and dividends are two forms of corporate payout policy. Both share repurchases and dividend increases signal a firm's profitable prospect and reduced risk in the future. It is important to examine share repurchases as an alternative form of corporate payout. Grullon and Michaely (2002) report that there are 84 percent of firms that

initiate a repurchase programme and 80 percent of firms that repurchase shares in 2000.

I develop two hypotheses from different perspectives. First, the presence of large customers reduces both the level and value of payout through the channel of the bargaining position. Second, the presence of large customers increases both the level and value of payout through the channel of relationship-specific investments.

I first examine how the presence of large customers affect share repurchases. I obtain a sample of 8,411 repurchase events from Thomson One and a sample of 86,164 observations from the Compustat Fundamental Annual database for the period from 1979 to 2013. I find that both the cumulative abnormal return and the net change in operating performance around the announcement of share repurchases are lower with the presence of large customers. I also analyse the impact of large customers' bargaining position on the value of share repurchases. I conclude that the presence of a large customer reduces the value of share repurchases through the perspective of bargaining position.

In addition, I conduct an empirical analysis of the relation between large customers and dividend increases. I collect the data of dividend increases from the Compustat Fundamental Annual database. The sample includes 65,314 observations in the period from 1979 to 2013. I find that both the cumulative abnormal return and the net change in operating performance around the announcement of increase in dividends are higher with the presence of large customers. Also, I examine how the relationship-specific investments and the signalling effect of dividend increases affect the value of firms with the presence of large customers. I conclude that the presence of a large customer increases the

value of dividend increases through the perspective of relationship-specific investments.

Moreover, I examine how the presence of large customers affects the managers' decision on the selection of payout methods. The results show that firms with the presence of large customers are more likely to repurchase shares rather than to increase dividends. Firms with large customers will have higher risks, and they may put more effort into signalling their good future prospects by using share repurchases, rather than increasing dividends which require a steadier cash flow. I also find a negative impact of large customers on the level of total payout through the channel of bargaining position.

This chapter makes the following contributions. First, only Wang (2012) examine how a firm's relationships with major customers affect the level of dividend payments. As corporate payout policy includes both dividends and share repurchases, I extend the literature to examine the impact of large customers on share repurchases. I also analyse the effect of large customers on both the value and the level of corporate payout including share repurchases and dividends. Wang (2012) finds that the customer-supplier relationships negatively impact the level of dividends payout because of the relationship-specific investments. On one hand, this chapter complements the viewpoint of Wang (2012) that the level of total payout is reduced by the presence of large customers. On the other hand, in consideration of the signalling effects of corporate payout, this chapter shows that large customers positively affect the value of dividend increases through the relationship-specific investments. I also disclose a different channel through which the large customers are associated with a lower value of share repurchases; namely, that the large customers reduce the value of share repurchases through bargaining position.

Second, I contribute to the literature about the determinants of corporate payout. Various determinants of the payout policy have been identified in previous literature, including financial resource distribution (e.g., Jensen, 1986; Stephens and Weisbach, 1998; Grullon and Michaely, 2002), agency problem (e.g., Easterbrook, 1984; Faulkender and Wang, 2006), signalling effects (e.g., Vermaelen, 1981; Woolridge, 1983; Bartov, 1991; Grullon and Michaely, 2004), tax (Allen and Michaely, 2003; Miller and Modigliani, 1961), executive stock options (Kahle, 2002) and so on. I extend the literature by documenting the large customers as a new determinant of corporate payout policy.

Third, I contribute to the literature on the role of large customers in the corporate finance area. Previous studies show that large customers affect a firm's capital structure (e.g., Titman, 1984; Maksimovic and Titman, 1991; Kale and Shahrur, 2007), corporate cash holdings (Itzkowitz, 2013; Bae and Wang, 2015), dividends (e.g., Johnson, Kang, and Yi, 2010; Wang, 2012) , trade credit (Dhaliwal, Judd, Serfling and Shaikh, 2016; Dass, Kale and Nanda, 2014), loan contract term (Campello and Gao, 2017), seasoned equity offerings (e.g., Johnson, Kang, Masulis, and Yi, 2017) and so on. This chapter provides more comprehensive evidence on the relation between large customers and the value of payout policy.

Fourth, I extend the literature which discusses the effect of large customers on firm value. There is a debate about how large customers affect firm value. On one hand, much of the literature argues that large customers reduce a firm's performance as large customers demand more concessions or discount from their suppliers (e.g., Galbraith, 1952; Scherer, 1970; Lustgarten, 1975; Klein, Crawford, and Alchian, 1978; Williamson, 1979; Balakrishnan, Linsmeier, and Venkatachalam, 1996). On the other hand, more recent studies argue that large customers increase a firm's

performance through information sharing, collaboration in marketing, reduction in operating expenses, and so on (e.g., Jackson, 1985; Cowley, 1988; Kalwani and Narayandas, 1995; Patatoukas, 2012). My thesis adds to this debate by providing another piece of evidence that large customers affect the value of corporate payout.

4.2. Literature Review

I review the literature about large customers and payout policy in this section.

4.2.1 Large Customers

The literature review about large customers is divided into four sections. The first three sections have been discussed in Chapter 2. They are “2.2.1.1. The role of large customers in corporate finance”, “2.2.1.2. The effects of large customers on firm value” and “2.2.1.3. Large customers and bargaining position”. I will mainly focus on the fourth section “The effects of large customers on firm risk” in this chapter.

The presence of large customers is related with a higher level of risk for supplier firms. Suppliers can be exposed to business risks both in the relationship with financially stable major customers and financially constrained major customers. There is also significant reduction in suppliers’ revenues if they lose large customers.

Above all, suppliers have risks in the relationship with financially stable major customers. Dhaliwal, Michas, Naiker, and Sharma (2014) argue that financially stable customers tend to demand unique designed products, which are unlikely to be redeployed for alternative uses. As a result, major customers with a higher bargaining position are likely to require concessions which reduce a supplier’s gross margins. From the perspective of auditing, greater dependence of suppliers on large customers show a potential risk of manipulating receivables and revenues. In order

to obtain targeted profits, suppliers can collude with their customers to fix prices, and engage in bribery such as kick-backs (Katz, 2012; KPMG 2010, 2011). The Statement of Financial Accounting Standards (SFAS) No.131 states that "…… major customers of an enterprise represent a significant concentration of risk".

Second, suppliers suffer a higher level of risks in the relationship with financially constrained customers. Hertzel, Li, Officer and Rodgers (2008) find that distress related to bankruptcy filings of a major customer is associated with negative and significant stock price effects for suppliers as customers impose indirect costs of distress by shifting purchases to other suppliers. As a result, customers cause financial distress to the current suppliers, and this negative impact is more pronounced when the contagion effect is more severe within suppliers. Lang and Stulz (1992) define the contagion effect as the situation when industrial competitors experience stock price declines when a rival firm suffers from financial distress. Similarly, Jorion and Zhang (2009) find a supplier who provides more trade credit to its major customer suffers more significant abnormal stock returns around the bankruptcy announcement of its major customer.

Third, suppliers' business and financial condition decline significantly if they lose large customers. Dhaliwal, Michas, Naiker, and Sharma (2014) document the risks stemming from the dependence of suppliers on their major customers. There are three reasons why a supplier's dependence on major customers have significant business risks as explained in Dhaliwal et al. (2014) and Dhaliwal, Judd, Serfling, and Shaikh (2016). First, when a major customer suffers financial distress, the supplier will have the risk of losing future sales. If a major customer goes bankrupt, the supplier will have the risks of being unable to collect outstanding receivables and

will lack cash flow. Second, a major customer may switch to a different supplier when the customer is not satisfied with the supplier's products or services. Third, when a major customer chooses to develop products internally, the supplier will experience substantial loss of future sales and have a new competitor in this industry. Dhaliwal et al. (2016) find that a more concentrated customer base increases a supplier's risk, which results in a higher cost of equity.

Furthermore, Itzkowitz (2013) argues that suppliers experience significant loss due to the customer-induced risks. Customers cannot guarantee that they will continue to buy the products when they are in financial distress. Losing a major customer may results in a sudden loss of operating income, or even destructive impact on the supplier firm. For example, Carillion plc was one of the largest British firms in the facilities management industry. The firm had strong power over its suppliers to dictate payment arrangements. A few years ago, Carillion was able to double its payment periods to its suppliers to 120 days (Plimmer, 2018). However, Carillion collapsed in January 2018, which resulted in a devastating impact on their suppliers. Some suppliers went into bankrupt due to the money owned by Carillion. To take another example, retailers are connected with a broad network of suppliers, and the bankruptcies of retailing customers have a severe impact on the economy. Barbaro (2008) reports that furniture retailers in financial distress leave behind tens of millions of dollars in unpaid payments to furniture manufacturers, shipping firms, advertising agencies and mall owners. These suppliers are unlikely to be paid in full, eliminating their financial pain, or even emerging from bankruptcy.

4.2.2. Relationship-Specific Investments

There is extant literature which discusses how relationship-specific investments affect corporate capital structure, compensation and payout policies, earnings management and accounting policies, etc.

First, previous literature shows that relationship-specific investments have effects on firms' capital structure. Titman (1984) finds that liquidation affects the relationship-specific investments which are undertaken by a firm with a particular product. A firm may consider its customers by taking lower leverage. Maksimovic and Titman (1991) find that a firm's debt capacity maintains a reputation for high quality products and the financial distress may induce the firm to cut down costs and lower the product quality. Therefore, a firm's financial distress and bankruptcy have a negative impact on the firm's relationship with its customers. Kale and Shahrur (2007) examine firms' leverage ratio and the relationship with customers. They find that a lower debt level can be an incentive to make a long-term connection between suppliers and customers and to conduct relationship-specific investments. Banerjee, Dasgupta and Kim (2008) further support the view of Titman (1984) and Titman and Wessels (1988). They suggest that the customer–supplier relationships affect the corporate capital structure choice. In particular, there is a relatively lower leverage ratio for the suppliers in durable goods industries if they have important relationships with principal customers.

Second, the customer-supplier relationship affects the corporate dividends policy, initial public offerings (IPOs) and seasoned equity offerings (SEOs). Wang (2012) finds that the relationship with large customers negatively impacts a firm's dividend payments. This is due to the high financial distress costs related to relationship-

specific investments. Johnson, Kang, and Yi (2010) suggest that the relationship with large customers plays a certificating role for IPO firms. IPO firms with the presence of large customers experience better operating performance and higher valuation than IPO firms without large customers. Johnson, Kang, Masulis, and Yi (2017) explore how the SEOs affect the market value and the relationship heath of both the issuers and their large customers. They suggest that both the issuer and its large customer have a negative operating performance on SEO announcements, and this is more pronounced if the customer-supplier relationships are significantly crucial. Corporate cash holdings are also influenced by the customer-supplier relationship. Itzkowitz (2013) argues that as a precaution against customer-induced risks, suppliers with the presence of large customers hold more cash than suppliers without the presence of large customers. Similarly, Bae and Wang (2015) suggest that relationship-specific investments result in a higher level of cash holdings. The customer-supplier relationship is one of the determinants of corporate cash holdings.

Furthermore, there are some studies which argue that relationship-specific investments are determined by the level of bankruptcy risk and financial distress. Hertzel, Li, Officer and Rodgers (2008) propose that a firm's financial distress is related to a negative impact on its supplier's share price. Raman and Shahrur (2008) show that firms prefer to establish a long-term connection with those customers who have good prospects. Kale, Kedia and Williams (2013) find a negative relation between firms' risk-taking investments and the customer-supplier relationship. In particular, when firms tend to increase their cash flow volatility, the relationship-specific investments are more sensitive to the managers' risk-taking decisions. Banerjee, Chang, Fu and Li (2015) report a negative impact of suppliers' environmental risk exposure on their relationship with large customers. The higher

level of suppliers' environmental risk lowers the likelihood of establishing relationships with their principal customers and shortens the relationship duration. In other words, as Johnson, Kand and Yi (2010) find, customers do not value their relationship with those suppliers who have greater financial distress and bankruptcy risks.

4.2.3. Payout Policy

In this section, the literature review on payout policy is classified as signalling effect, agency theory, substitution effects, and other areas in the payout policy.

4.2.3.1. Signalling effect

Both share repurchases and dividend increases have signalling effects on future profitability, financial leverage and systematic risks.

In terms of future profitability, both share repurchases and dividend increases are a positive signal to the market. Vermaelen (1981) suggests that firms with share repurchases experience a permanent increase in their share prices and there is an increase in earnings per share around the repurchase announcement date. Ikenberry, Lakonishok, and Vermaelen (1995) report the traditional signalling hypothesis, which is induced by information asymmetry between a firm's managers and the market. Managers might choose to repurchase shares if the firm is undervalued based on their assessment. Therefore, the announcement of share repurchases is regarded as a valuable signal to the less informed market. Kahle (2002) suggests that if the current share performance is poor or if a firm's free cash flow is high, the firm will tend to repurchase shares than to raise the level of dividends. Comment and Jarrell (1991) and Kahle (2002) argue that share repurchase programmes are undertaken to signal undervaluation to investors, and

the announcement-day return is increased with the percentage of outstanding shares repurchased.

Dividend increase also signals future profitability and increased financial resources. Asquith and Mullins (1983) suggest that the dividend policy transmits the information about a firm's current performance and future prospects from the internal management to outside investors. The signalling effects are shared by dividends and share repurchases. Share repurchases are more attractive because of the tax advantage but the timing of share repurchases is irregular. Dividends are more regular payments and outside investors should have regular signals sent by management. Bhattacharya (1980) shows that the cash dividend payout is a signal of expected cash flows in the setting of information asymmetry as the tax on cash dividends are higher than the tax on capital gain, and the outside investors have imperfect information about the firm's profitability. Woolridge (1983) finds that positive (negative) dividend change announcements lead to positive (negative) share price changes. The main reason for the positive relation between dividend announcements and share price changes is the market signalling effect. Brickley (1983) finds there is a positive earnings change after the announcement of dividend increases. Ambarish, John, and Williams (1987) also find that both dividends and investment are efficient signals, and dividend changes have a positive effect on share prices.

Moreover, both share repurchases and dividend increases function as the signals of increased financial leverage and reduced systematic risks. Lintner (1956) and Brav, Graham, Harvey, and Michaely (2005) suggest that managers repurchase shares and increase dividends when they find that the firm has a lower level of cash flow risk. In particular, the announcement of share repurchases signals to the market

both the reduction in agency costs and in firm risk. Bartov (1991) finds a decrease in the risk of share prices following the announcements of share repurchases, which is signalled by managers who raise a firm's leverage through share repurchases when they anticipate firm risk reduction. Grullon and Michaely (2004) report that firms with share repurchases experience a significant decline in systematic risk relative to firms without share repurchases. For repurchasing firms, the level of reduction in firm risk is positively related to the level of reduction in R&D expenses and capital expenditure. In the long run, the increase in stock prices is positively related to changes in future profitability and negatively related to changes in firm risk and the cost of capital.

In terms of the dividend increases, Charest (1978) finds a significant positive change in share price following the announcement of dividend increases, and the share price change is partially induced by a risk reduction of the dividend-increasing firms. Boehme and Sorescu (2002) and Grullon, Michaely, and Swaminathan (2002) find a significant reduction in systematic risk for the firms which increase dividend payments. This results in a decrease in their cost of capital. In the long run, the dividend increasing firms with a large risk reduction also experience a significant increase in their share prices. They further conclude that mature firms are more likely to pay out large free cash flows in the form of share repurchases and dividends. Thus, for mature firms, dividend increases signal reduced systematic risks, a lower number of investment opportunities and declining profit growth.

4.2.3.2 Agency theory

There is extensive finance literature which shows that firms decide to repurchase shares to distribute excess capital. This will therefore increase the leverage ratio. Jensen (1986) and Stephens and Weisbach (1998) point out that share repurchasing

is a common method to distribute excess cash. Grullon and Michaely (2002, 2004) find that firms have a higher possibility to pay out cash through share repurchases, and repurchase events lower the amount of free cash flows at management's disposal. Allen and Michaely (2003) point out that firms' payout decisions involve a great amount of cash payment. Share repurchasing in particular is the preferred approach, rather than dividends, to distribute cash to shareholders (E.g., Grullon and Michaely, 2002; Brockman, Howe, and Mortal, 2008; Bagwell and Shoven, 1989; Elton and Gruber, 1968). Also, firms have the propensity to execute more share repurchases if they have strong cash flows (Jensen, 1986; Stephens and Weisbach, 1998). Almeida, Fos and Kronlund (2016) examine the real effects of share repurchases on firms. Firms that repurchase shares will subsequently reduce employment and investment capital and hold less financial slack. EPS-driven share repurchases cause firms to decrease investment, employment, cash holdings and R&D.

Thus, due to the distribution of excess financial resources, share repurchases increase a firm's leverage and bankruptcy risks. Bagwell and Shoven (1989) and Opler and Titman (1996) argue that firms repurchasing shares after a share price increase aim to have an optimal capital structure. Dittmar (2000) reports that firms with a large amount of excess cash or strong cash flow are more likely to repurchase shares, and therefore increase the leverage ratios. Wang (2012) shows that the corporate dividend payout is negatively impacted by a firm's dependence on customer-supplier relationships because the relationship-specific investments are associated with high financial distress costs.

Lintner (1956) suggested that a dividend payout decision is determined by the long-run and sustainable earnings. The arguments of Lintner are strongly supported

by Fama and Babiak (1968). The stability of dividends is a firm's primary concern and the dividend changes essentially depend on a firm's earnings. Most firms have their fixed dividend payout ratio. Firms are reluctant to reduce dividends and they adjust their dividend slowly if there are sudden increases in earnings.

Based on Jensen's (1986) free cash flow argument, the existing literature on payout policy suggests that dividend payout is a way to distribute free cash flow. Jensen (1986) finds that equityholders can minimise the potential overinvestment conducted by management. It will be harder for management to invest in negative NPV projects if they have less discretionary cash. Increasing the level of payout is a method to take unnecessary cash out of a firm. Jagannathan et al., (2000) find that dividend payout is positively related to the amount of operating cash flow. Firms that experience lower cash flow volatility tend to payout dividends, because dividend payout is more like a permanent commitment relative to share repurchases. Firms increase dividends following a good operating performance and dividends increase steadily over time.

Much of the literature examines the relation between agency problems and dividend payout. Faulkender and Wang (2006) show that firms use dividends rather than share repurchases to distribute a greater amount of cash, and the greater dividend payout reduces the marginal value of cash holdings. Easterbrook (1984) finds that the dividend payout can be a useful method to mitigate the agency problem of management. The dividend payout keeps firms on the capital market and adjusts the level of risk undertaken by managers and investors. Firms pay dividends and raise external capital simultaneously for carrying out daily operations. La Porta, Lopez-De-Silanes, Shleifer, and Vishny (2000) argue that dividend payout is an

effective legal protection which enables minority shareholders to obtain dividend payments, and the level of dividend payment is positively related to the power of minority shareholders. Regular dividend payout also enables a firm to establish a reputation of decent treatment to investors.

4.2.3.3. Difference and substitution between share repurchases and dividends

Firms use dividends and share repurchases at different times by considering their cash flows, level of debt, financial flexibility and so on.

Jagannathan, Stephens and Weisbach (2000) identify that firms pay dividends with operating cash flows, while repurchase shares with non-operating cash flows. Firms increase dividends following good stock market performance and repurchase shares following poor performance. Share repurchases substitute dividends because of their flexibility. Bonaimé, Hankins and Harford (2013) argue that the corporate payout is a determinant of financial flexibility. The financial flexibility can be adjusted by making choices between dividends and share repurchases. Repurchasing firms also have much more volatile cash flows and distributions.

Firms choose dividend payout to distribute relatively permanent cash and choose share repurchases to distribute temporary cash (Guay and Harford, 2000; Jagannathan, Stephens and Weisbach, 2000; Lee and Suh, 2011; Haw, Ho, Hu, and Zhang, 2011). Lee and Rui (2007) examine the time-series behaviour of dividends and share repurchases. They find the dividends and share repurchases are imperfectly substituted for each other. The announcement of share repurchases is related to the temporary components of earnings, but dividends are not.

Grullon and Michaely (2002) show that firms have gradually substituted share repurchases for cash dividends. Share repurchases have become the main form of

cash distribution for young firms. For mature firms, they also have a higher propensity to initiate share repurchases without dividend cuts. Based on the findings of Bagwell and Shoven (1989), Kahle (2002) shows that firms with a higher leverage ratio are less likely to repurchase shares. Highly levered firms have much more financing costs and tend to repurchase fewer shares. Firms with dividend increases have a higher level of debt than firms with share repurchases. The reason is that firms with dividend payouts have more stable cash flows and therefore take on more debt.

Jiang, Kim, Lie and Yang (2013) show that the premium of dividends payout has anegative impact on the choice of share repurchases, whereas the premium of share repurchases is negatively associated with the choice of dividend payments. This is consistent with the substitution effect between dividends and share repurchases.

4.2.3.4. Other areas in the payout policy

Apart from the signalling effects, agency theory, and substitution theory, there are extensive studies which on other areas in the payout policy such as tax, executive stock options, and behavioural finance.

In terms of the tax in payout policy, Allen and Michaely (2003) suggest that individuals pay much more taxes on dividends than on share repurchases. The reason is that dividends are taxed as ordinary income and share repurchases are taxed on a capital gains basis. The tax rate on capital gains is normally lower than the tax rate on ordinary income. Miller and Modigliani (1961) argue that the different clienteles are taxed differently. Firms have the incentive to supply shares which minimize taxes for each clientele.

For the relation between executive stock options and share repurchases, Kahle (2002) reports that firms are more likely to announce share repurchases when executives have considerable share options outstanding and when employees have substantial exercisable options. The amount of share repurchases is independent with executives' options but positively associated with employees' exercisable options. Kahle also argues that managers might choose to repurchase shares if a firm is undervalued based on their assessment.

Moreover, many papers find a relationship between behavioural finance and payout policy. Ikenberry, Lakonishok, and Vermaelen (1995) document the long-term firm performance following the announcements of open market repurchases. They suggest that firms make announcements of share repurchases at the time when the firm value is under-priced. However, the market underreacts to open market repurchase announcements on average. The reason could be that either the managers are over optimistic about firm value, or the market neglects a considerable proportion of undervaluation signals. Baker and Wurgler (2004) identify a catering theory of dividends. Managers pay out dividends when prevailing investors demand dividends. They pay dividends when investors prefer dividend-paying firms, and tend to omit dividends when investors prefer firms without paying dividends.

4.3. Hypotheses

This section develops hypotheses from the perspective of bargaining position and relationship-specific investments.

4.3.1. Bargaining Position

Many studies suggest that large customers reduce the firm performance of their suppliers by demanding more discounts or concessions from suppliers such as lower price, and extended trade credit (e.g., Galbraith, 1952; Scherer, 1970; Lustgarten, 1975; Klein, Crawford, and Alchian, 1978; Williamson, 1979; Balakrishnan, Linsmeier, and Venkatachalam, 1996). In addition, the previous literature on the bargaining position between customers and suppliers investigates the role of firm surplus available for sharing in the bargaining. For example, Kale and Shahrur (2007) find a positive relation between a firm's leverage and the degree of concentration in customer industries. They argue that a higher leverage increases a firm's bargaining position with a labour union by lowering the amount of firm surplus available for sharing with labour. Therefore, the value of a firm can be discounted by the presence of large customers whose bargaining position is stronger than that of suppliers.

Furthermore, both share repurchases and dividend increases signal the future profitability to the market. Firms with share repurchases experience a permanent increase in their share prices and there is an increase in earnings per share around the repurchase announcement date (Vermaelen, 1981). Ikenberry, Lakonishok, and Vermaelen (1995) suggest that the signalling effect is induced by information asymmetry between a firm's managers and the market. Managers might choose to repurchase shares if the firm is undervalued based on their assessment (Kahle, 2002). Therefore, the announcement of share repurchases is regarded as a valuable signal to the less informed market and the announcement-day return is increased with the percentage of outstanding shares repurchased (Comment and Jarrell, 1991). In terms of dividend increases, Woolridge (1983) finds that the market signalling

effect of dividend changes is the primary reason for the announcements of dividend increases producing positive changes in the share price. Brickley (1983) find there are positive earnings changes after the announcement of dividend increases. Ambarish, John, and Williams (1987) also find the positive announcement signalling effect of dividend changes on share prices. Outside investors realise the positive relation between current dividends and future earnings and invest more in corporate shares with higher historical dividends.

A firm's large customers will be aware of the announcements of share repurchases and dividend increases. The announcements signal a firm's better future profitability and increased level of financial resources. A firm's bargaining position is negatively related to the firm's surplus available to large customers, and positively related to the leverage ratio (Kale and Shahrur, 2007) Therefore, the bargaining position of a firm will be lowered with the improved future profitability signalled by share purchases and dividend increases, because the firm will have more potential resources available to be extracted by their large customers. Large customers, who are signalled by the payout announcements, may demand more concessions from the firms with an increased level of financial resources.

Hypothesis 1: The presence of large customers reduces both the level and value of payout.

4.3.2. Relationship-Specific Investments

Bankruptcy risk and financial distress affect the relationship-specific investments undertaken by customers and suppliers. A lower debt level can be an incentive to make a long-term connection between suppliers and customers (Maksimovic and Titman, 1991). Titman (1984) states that a firm can commit to decreasing the

liquidation risks by choosing a lower leverage in the situation that the firm requires its customers to undertake the relationship-specific investments that will lose value if the firm goes into liquidation. Firms that can potentially impose high costs on their customers in the event of liquidation tend to choose lower debt ratios (Titman and Wessels, 1988; Hennessy and Livdan, 2009). Kale and Shahrur (2007) suggest that a firm's liquidation decision can significantly impact the relationship-specific investments because it is causally associated with the firm's bankruptcy status.

In the literature of payout policy, both share repurchases and dividend increases are recognised as a signal of increased financial leverage and reduced bankruptcy risks. Managers repurchase shares and increase dividends when they find that the firm has a lower level of cash flow risk (Lintner, 1956; Brav, Graham, Harvey, and Michaely, 2003) and there is a decline in the risk of share prices following the announcements of share repurchases (Bartov, 1991). The level of reduction in firm risk is also positively related to the level of reduction in R&D expenses and capital expenditure (Grullon and Michaely, 2004). Furthermore, there is also a significant reduction in systematic risk and cost of capital for the firms which increase dividend payments. The large risk reduction can be one of reasons for the significant increase in their share prices around the announcement of dividend increases (Charest, 1978; Boehme and Sorescu, 2002; Grullon, Michaely, and Swaminathan, 2002).

Therefore, share repurchases and dividend increases enhance the customer-supplier relationships through the reduction of bankruptcy risk and cost of capital. I expect the reduced bankruptcy risk and enhanced customer-supplier relationships will increase firm value.

Hypothesis 2: The presence of large customers increases both the level and value of payout.

4.3.3. Summarizing the Hypotheses

The above hypotheses predict the effects through different perspectives. I empirically examine which hypothesis is (or which hypotheses are) most precise to explain how the presence of large customers affects the level and value of share repurchases. The predictions of the hypotheses are summarized in the following table. A plus (minus) sign indicates a positive (negative) impact of large customers on the value of share repurchases.

	Bargaining Position	Relationship-specific investments
Level of payout	−	+
Value of payout	−	+

4.4. Data and Variables

In this section, I describe the data and variables.

4.4.1. Data Sources

I obtain the U.S. data on repurchase events from Thomson One database, and I also collect the data of share repurchases and dividends from WRDS CRSP database. The data period is from 1979 to 2013. I exclude the financial firms (SIC between 6000 and 6999) and exclude the observations with incomplete data. I use quarterly dividends data in CRSP when I identity an event of dividends increase. After the screening procedure, I obtain a sample of 8,411 repurchase events and 25,928 dividends increase events with CAR. I also collect the data about share repurchases and dividends from the Compustat Fundamental Annual database. The sample size of share repurchases is 86,164 observations which consist of 8,042 repurchase events and 78,122 non-repurchase events. The sample size of dividends

is 65,314 observations, which includes 34,919 events of dividend increases and 30,395 events of no dividend increases.

4.4.2. Data on Large Customers

Since Financial Accounting Standards Board (FASB) No.14 requires firms to report their principal customers who occupy more than 10% of total annual sales, the Compustat Customer Segments database provides the data on these customers as well as the amount of sales to these customers from each segment. However, only the names of customers are reported in the Compustat Customer Segments database, and they are generally recorded as abbreviations instead of original names. I link the names of the customers with firm identifiers in the Compustat Annual database by hand. In order to match the abbreviations of customer names with their original names, I first check the order and number of letters in the abbreviation and then identify the most likely corresponding original names in the Compustat Annual database. For example, the abbreviation of the name of a customer is shown as “IBM” in the Compustat Customer Segments database. I use the above algorithm and find that it corresponds to the ‘‘Intl Business Machines Corp’’ in the Compustat Annual database. For another example, “Emerson EL” shown in the Customer Segments database corresponds to the ‘‘Emerson Electric Co’’ in the Compustat Annual database. However, I exclude those abbreviations which are ambiguous and cannot be precisely matched with the names of any firm in the Compustat.

4.4.3. Variables

I present the description of variables in this section.

4.4.3.1. The proxies of large customers

I use three proxies for large customers. The first one is a dummy variable called Large Customers. Large Customers is equal to one if a firm has at least one large customer which accounts for over 10% of the firm's total annual sales and equals zero otherwise. The second variable is called Top Large Customer. Top Large Customer is defined as the ratio of the purchases made by the top large customer to the total sales of the firm. The third variable is called All Large Customers. This is defined as the ratio of the purchases made by all large customers to the total sales of the firm.

4.4.3.2. The measures for share repurchases

I use announcement return as the measures of the stock market performance of share repurchases. The announcement return is calculated as the cumulative abnormal return over days (-1, +1) around the announcement date. I follow the method used in Chapter 2 to calculate the announcement return. The CRSP equally weighted index is used as the market return in the market model. The market model is estimated by using a firm's daily return and the return on the CRSP equally weighted index over days -200 to -20, where day 0 is the event date.

I use the net change in ROA as a measure of the operating performance. ROA is the ratio of EBIT to non-cash assets. I calculate the Change in ROA from year t-1 to year t+1. Net Change in ROA is the difference between an event firm's change in ROA and its matched comparable firm's change in ROA from year t-1 to year t+1. I construct a sample of comparable firms with propensity score matching. I match each event firm to a non-event firm requiring that the non-event firm has a minimum difference in the propensity score based on firm size, market-to-book ratio, capital expenditure, leverage, cash flow, R&D, dividends and sales growth. I also match

each event firm to a non-event firm within the same industry based on the two-digit SIC code. I provide the details about the propensity score matching in Appendix C.

4.4.3.3. The measures for dividend increases

I use announcement return as the measure of the stock market performance of dividend increases. The announcement return is calculated as the cumulative abnormal return over days (-1, +1) around the announcement date. I use the same calculation method as the announcement return of share repurchases to obtain the announcement return of dividend increases.

I use the net change in ROA as a measure of the operating performance of dividend increases. ROA is the ratio of EBIT to non-cash assets. I calculate the Change in ROA from year t-1 to year t+1. Net Change in ROA is the difference between an event firm's change in ROA and its matched comparable firm's change in ROA from year t-1 to year t+1. I use the same calculation method as the operating performance of share repurchases to obtain the operating performance of dividend increases.

4.4.3.4. Control Variables

Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Percent Sought is the number of

shares sought in the share repurchases scaled by the total shares outstanding. Run-up is the sum of the monthly stock return six month prior to the announcement date. Firm Age is the age of the firm, calculated as the difference between the year in which the firm was originally formed and the current year. As a proxy for liquidity, Turnover is the ratio of the monthly trading volume to the total shares outstanding.

4.5. Results

I report my results in this section. First, I report the univariate statistics. Next, I examine the relation between large customers and share repurchases. I also investigate how the relationship-specific investments affect the relation between large customers and the value of share repurchases. In addition, I analyse how the presence of large customers affects dividend increases. I show that the signalling effect of dividend increases influences the relation between large customers and the value of dividend increases.

4.5.1. The Value of Share Repurchases

4.5.1.1 Univariate statistics

Table 3.1 shows the univariate statistics. The mean of Share Repurchases CAR (-1, +1) is 0.0369 and the median is 0.0244. The mean of the variable Large Customers is 0.1129, indicating that around 11.29% of the firms in my sample have at least one large customer. The mean of the variable Top Large Customer is 0.1694. This shows that on average the largest customer of a firm occupies around 17% of total sales, which implies the important role of the largest customer, and the mean of the variable All Large Customers is 0.2040. The level of share repurchases is 1.43% of total assets.

4.5.1.2. Univariate analysis on the value of share repurchases

Panel A of Table 3.2 shows the univariate analysis on the announcement return of share repurchases. I divide the repurchasing firms into two groups based on the dummy variable Large Customer. In the table of CAR window from day -1 to day +1, Column 1 shows the results for the group of firms with large customers. The mean of the announcement return is 0.0287 and the median is 0.0186. Column 2 shows the results for the group of firms without large customers. The mean of announcement return is 0.0377 and the median is 0.0223. I conduct the mean test and the median test for the difference. I find that they are significantly different between the two groups. The difference in the mean is -0.0090 (p-value= 0.01) and the difference in the median is -0.0037 (p-value=0.05).

Panel B of Table 3.2 shows the univariate analysis on the operating performance of share repurchases. I divide the share repurchasing firms into two groups based on the dummy variable Large Customer. Column 1 shows the results for the group of firms with large customers. The mean of operating performance is -0.0125 and the median is -0.0080. Column 2 shows the results for the group of firms without large customers. The mean of operating performance is 0.0007 and the median is 0.0000. I conduct the mean test for the difference and they are significantly different between the two groups. The difference in the mean is -0.0132 (p-value=0.04) and the difference in the median is -0.0080 (p-value=0.09). The results in Panel B of Table 3.2 imply that the operating performance of share repurchases is lower for the group of firms with large customers. Therefore, the results in Table 3.2 imply that the value of share repurchases is lower for the group of firms with large customers. This is consistent with the prediction of Hypothesis 1 that the presence of large customers reduces the value of share repurchases through the channel of bargaining position.

4.5.1.3. Large customers and the announcement return of share repurchases

Table 3.3 shows the regressions on the relation between large customers and the announcement return of share repurchases. The dependent variable is CAR (-1, 1) in year 0, and the independent variables are Large Customers, Top Large Customer, and All Large Customers in year t-1. Column 1 shows the regression when I use Large Customers as the measure for large customers. I find that the coefficient of Large Customers is -0.010 (p-value = 0.01). This implies that the presence of large customers is associated with a 0.10% reduction in the announcement return of share repurchases. The coefficient of Top Large Customer is -0.025 (p-value = 0.04), and the coefficient of All Large Customers is -0.022 (p-value = 0.03). This implies that the announcement return of share repurchases is lower when the purchases made by the largest customer or made by all large customers are higher. Therefore, the results in Table 3.3 are consistent with the prediction of Hypothesis 1 that the value of share repurchases is lower with the presence of large customers.

4.5.1.4. Large customers and operating performance of share repurchases

Table 3.4 reports the relation between the presence of large customers and the change in operating performance around the announcement date of share repurchases. This is a sample of 8278 repurchase events from 1979 to 2013. The dependent variable is Net Change in ROA across all columns. The coefficient of Large Customers is -0.014 (p-value = 0.02), which means the presence of large customers reduces the operating performance of share repurchases. The coefficient of Top Large Customer is -0.052 (p-value = 0.04), and the coefficient of All Large Customers is -0.041 (p-value=0.05). The results imply that the operating performance of share repurchases is lower when the purchases made by the largest customer and all large customers are higher. Therefore, the results in Table 3.4 are

consistent with the prediction of Hypothesis 1 that the presence of large customers lowers the value of share repurchases through the channel of bargaining position.

4.5.1.5. Bargaining position and share repurchases

To explain the negative impact of large customers on share repurchases, I conduct further analysis from the perspective of bargaining position. Following Hui, Klesa, and Yeung (2012), I use both firm-level and industry-level proxies of bargaining position. First, I use the relative size of customers to the firm as the firm-level proxies for the bargaining position of large customers. Relative Size 1 is defined as the ratio of the average market value of the customer to the market value of the supplier firm. Relative Size 2 is the average market value of firms in the industries that a customer belongs to divided by the market value of the supplier firm. Second, I use the concentration ratio of customers as industry-level proxies for the bargaining position of large customers. Concentration 1 is the average of a firm's Herfindahl-Hirschman index value in the industries that a customer belongs to. Concentration 2 is the average of the ratio of the market value of a customer firm to the average market value of firms in the industries that a customer belongs to.

In Table 3.5, Panel A shows the relation between the bargaining position of large customers and the announcement return of share repurchases. The dependent variable is CAR (-1, 1) across all columns. In Column 1 and 2, the coefficient of the Relative Size 1 is -0.02 (p-value = 0.01), and the coefficient of the Relative Size 2 is -0.02 (p-value = 0.01). This indicates that a larger relative size of large customers will reduce the announcement return of share repurchases. In Column 3 and 4, the coefficient of the Concentration Ratio 1 is -0.011 (p-value = 0.09), and the coefficient of Concentration Ratio 2 is -0.001 (p-value = 0.02). The results indicate that a higher level of large customers' concentration ratio is related to a lower announcement

return of share repurchases. Thus, Panel A indicates that the stronger bargaining position of large customers reduces the firm's announcement return of share repurchases.

Panel B of Table 3.5 shows the relation between the bargaining position of large customers and the operating performance of share repurchases. The dependent variable is Net Change in ROA across all columns. In Column 1 and 2, the coefficient of the Relative Size 1 is -0.02 (p-value = 0.05), and the coefficient of the Relative Size 2 is -0.02 (p-value = 0.08). This indicates that a larger relative size of large customers will reduce the operating performance of share repurchases. In Columns 3 and 4, the coefficient of the Concentration Ratio 1 is -0.044 (p-value = 0.05), and the coefficient of Concentration Ratio 2 is -0.001 (p-value = 0.07). The results indicate that a higher level of large customers' concentration ratio is related to a lower operating performance of share repurchases. Thus, Panel B indicates that the stronger bargaining position of large customers reduces the firm's operating performance of share repurchases.

Therefore, the results in Table 3.5 support Hypothesis 1 that the value of share repurchases is lower with the presence of large customers through the channel of bargaining position.

4.5.1.6. Heckman two-stage estimation

As a robustness check, I use the Heckman two-stage estimation to control for the self-selection problem. I use the probit model of Table 3.5 as the first stage of the Heckman estimation. Panel A of Table 3.6 shows the second stage of the Heckman estimation when I include the Inverse Mills Ratio in the regressions of the announcement return. In the table of CAR window from day -1 to day 1, I find that

the coefficient of Large Customers is -0.010 (p-value = 0.01). The coefficient of the Top Large Customer is -0.025 (p-value = 0.04) and the coefficient of All Large Customers is -0.022 (p-value = 0.03). They support the findings of Table 3.3 that the announcement return of share repurchases is reduced by the presence of large customers.

Panel B of Table 3.6 reports the second stage of the Heckman estimation in the regressions about the operating performance of share repurchases. The coefficient of Large Customers is -0.013 (p-value = 0.04). The coefficient of Top Large Customers is -0.046 (p-value = 0.07) and the coefficient of All Large Customers is -0.036 (p-value = 0.09). The results are consistent with Table 3.4 that the presence of large customers reduces the operating performance of share repurchases.

Therefore, after controlling for the self-selection problem, I find consistent results in Table 3.3 and Table 3.4 that both the announcement returns and the net change in operating performance are lower for repurchasing firms with the presence of large customers.

4.5.2. The Value of Dividend Increases

4.5.2.1. Univariate statistics

Table 3.7 shows the univariate statistics. The mean of Dividends CAR (-1, +1) is 0.0095 and the median is 0.0049. The mean of the variable Large Customers is 0.0516, indicating that around 5.16% of the firms in my sample have at least one large customer. The mean of the variable Top Large Customer is 0.2055. This shows that on average the largest customer of a firm occupies around 20.55% of total sales, which implies the important role of the largest customer, and the mean of the variable All Large Customers is 0.2322. The level of dividend increases is 2.51% of total assets.

4.5.2.2. Univariate analysis on the value of dividend increases

Panel A of Table 3.8 shows the univariate analysis on the announcement return of dividend increases. I divide the dividend increasing firms into two groups based on the dummy variable Large Customer. In the table of CAR window from day -1 to day +1, Column 1 shows the results for the group of firms with large customers. The mean of announcement return is 0.0111 and the median is 0.0053. Column 2 shows the results for the group of firms without large customers. The mean of announcement return is 0.0089 and the median is 0.0049. I conduct the mean test and the median test for the difference. I find that they are significantly different between the two groups. The difference in the mean is 0.0022 (p-value= 0.02).

Panel B of Table 3.8 shows the univariate analysis on the operating performance of dividend increases. I divide the dividend increasing firms into two groups based on the dummy variable Large Customer. Column 1 shows the results for the group of firms with large customer. The mean of announcement return is 0.0157 and the median is 0.0014. Column 2 shows the results for the group of firms without large customer. The mean of operating performance is 0.0099 and the median is 0.0001. I conduct the mean test for the difference and there are significant differecest between the two groups. The difference in the mean is 0.0058 (p-value= 0.07). Therefore, the results in Table 3.8 imply that the operating performance of dividend increases is higher for the group of firms with large customers. This is consistent with the prediction of Hypothesis 2 that the presence of large customers increases the value of dividend increases through the channel of relationship-specific investments.

4.5.2.3. Large customers and the announcement return of dividend increases

Table 3.9 shows the regressions on the relation between large customers and the announcement return of dividend increases. The dependent variable is CAR (-1, 1)

in year 0, and the independent variables are Large Customers, Top Large Customer, and All Large Customers in year t-1. The coefficient of Large Customers is 0.001 (p-value = 0.15). The coefficient of Top Large Customer is 0.011 (p-value = 0.01), and the coefficient of All Large Customers is 0.010 (p-value = 0.01). This implies that the announcement return of dividend increases is increased with the purchases made by the largest customer or made by all large customers, although the results are weaker for the events of dividends increase. Therefore, the results in Table 3.9 support Hypothesis 2 that the value of dividend increases is higher with the presence of large customers. The presence of large customers increases the value of dividend increases through the channel of relationship-specific investments.

4.5.2.4. Relationship-specific investments

To examine Hypothesis 2, the presence of large customers increases the value of dividend increases through the relationship-specific investments. A dividend increasing firm has a higher likelihood of engaging in the relationship-specific investments with its customers because of the signalling effect of a lower bankruptcy risk. I use Key Customers R&D to measure the level of relationship-specific investments. When the level of Key Customers R&D is higher, the probability of conducting relationship-specific investments is higher. Therefore, I examine how the Key Customers R&D affect the relation between large customers and the value of dividend increases.

Following Kale and Shahrur (2007), I construct the variable Key Customers R&D as the measure of the level of relationship-specific investments. Key Customers R&D is defined as the ratio of each customer's R&D to total assets, multiplied by the percentage of a firm's sales to each customer (See Appendix A4). The Key

Customers R&D will be high if the customer with high R&D expenses purchases a significant amount of goods or services from the firm. I use the interaction terms such as Top Customer * Key Customers R&D to examine the impact of relationship-specific investments.

In Table 3.11, I report how the relationship-specific investments affect the relation between large customers and the value of dividend increases. The dependent variable is CAR (-1, 1) across all columns. In Column 2, the coefficient of the interaction term Top Large Customer * Key Customers R&D is 0.955 (p-value = 0.06). I find a similar pattern in Column 3, with the coefficient of the interaction term All Large Customers * Key Customers R&D being 0.922 (p-value = 0.03). Although the results are weaker for the events of dividend increases, they indicate that when the customer firm has a higher level of R&D expenses, the announcement return of dividend increases is increased by the amount of purchases made by the largest customer and all large customers.

Therefore, the results in Table 3.11 imply that the presence of large customers increases the value of dividend increases when the customer firm has a higher level of R&D expenses. They support Hypothesis 2 that the presence of large customers increases the value of dividend increases through the relationship-specific investments.

4.5.2.5. Signalling effect of dividend increases

Li et al. (2008, page 674) states that "because dividends imply a firm commitment and are also historically tax disadvantaged relative to repurchases, dividends constitute a more costly signal and investors should perceive them as having stronger information content". It implies that dividend increase signals good

information and lower bankruptcy risk. In Andres et al (2013, page 624), they state that "The informational role of dividend announcements is more important in smaller firms, which are covered by fewer analysts". As fewer analysts have higher forecast error, it implies that higher asymmetric information is associated with more important signalling role of dividends. It is associated with higher CAR of dividends. Therefore, dividend increase signals good information and lower bankruptcy risk and this informational role is more important for the firms with higher asymmetric information.

According to Thomas (2001), firms are expected to have larger forecast errors when they have large differences in information asymmetry between managers and outsiders. The signalling effect is expected to be higher when a firm has larger forecast errors. I collect data about analyst forecasts on firm performance from I/E/B/S estimates. I match the forecast data with the data of dividend increases events identified from CRSP. The final sample includes 24,893 events of CAR with forecast estimates and 12,201 events of operating performance with forecast estimates from 1979 to 2013. As a proxy of signalling effects of payout, Forecast Error is defined as the absolute difference between the median forecast and actual earnings as a percentage of the median forecast. Table 3.12 reports the signalling effects of dividend increases on the relation between large customers and the value of dividend increases.

In Panel A of Table 3.12, I examine whether the signalling effect influences the relation between large customers and the announcement return of dividend increases. The Column 1 shows that the coefficient of Forecast Error is 0.002 (p-value=0.03). This is consistent with Andres et al., (2013) that that higher asymmetric information is associated with more important signalling role of dividends and it is associated with higher announcement returns of dividend increases. The coefficient

for the interaction term Large Customers * Forecast Error is 0.019 (p-value=0.01). It implies that the positive relation between signalling effect and the announcement returns of dividend increases are more pronounced for the firms with the presence of large customers. I obtain similar results when I use Top Large Customer and All Large Customers in Column 2 and Column 3. The Column 2 shows that the coefficient of Forecast Error is 0.003 (p-value=0.02). The coefficient for the interaction term Top Large Customer * Forecast Error is 0.065 (p-value=0.01). The Column 3 shows that the coefficient of Forecast Error is 0.003 (p-value=0.03). The coefficient for the interaction term All Large Customers * Forecast Error is 0.066 (p-value=0.01). The results show that the positive relation between signalling effect and the announcement returns of dividend increases are more pronounced for the firms with the presence of large customers. The results are consistent with Hypothesis 2 that dividend increases signal good information and lower bankruptcy risk which promote relationship-specific investments, and therefore the presence of large customers increase the value of dividends increases.

In Panel B of Table 3.12, I examine how the Forecast Error affect the relation between large customers and the operating performance of dividend increases. In Column 3, the coefficient for the interaction term All Large Customers * Forecast Error is 0.171 (p-value=0.09). This means that the positive relation between signalling effect and the operating performance of dividend increases are more pronounced for the firms with the presence of large customers. I get similar results when I use Large Customers and Top Large Customers in Column 1 and Column 2. Although the results are weaker for the events of dividend increases, they show that that the positive relation between signalling effect and the operating performance of

dividend increases are more pronounced for the firms when their large customers make higher level of purchases.

Therefore, Table 3.12 supports Hypothesis 2 that dividend increases signal good information and lower bankruptcy risk which promote relationship-specific investments, and therefore the presence of large customers increases the value of dividends increases.

4.5.2.6. Heckman two-stage estimation

As robustness check, I use the Heckman two-stage estimation to control for the self-selection problem. I use the probit model of Table 3.15 as the first stage of the Heckman estimation. Panel A of Table 3.13 shows the second stage of the Heckman estimation when I include the Inverse Mills Ratio in the regressions of the announcement return. In the table of CAR window from day -1 to day 1, I find that the coefficient of Top Large Customer is 0.009 (p-value = 0.02) and the coefficient of All Large Customers is 0.009 (p-value = 0.01). Although the results are weaker for the events of dividends increase, they support my Table 3.13 that the announcement return of dividend increases is increased by the presence of large customers.

Panel B of Table 3.13 reports the second stage of the Heckman estimation in the regressions about the operating performance of dividend increases. The coefficient of Large Customers is 0.005 (p-value = 0.10). The coefficient of Top Large Customers is 0.022 (p-value = 0.10) and the coefficient of All Large Customers is 0.020 (p-value = 0.10). Although the results are weaker for the events of dividends increase, they are consistent with Table 3.10 that the presence of large customers increases the operating performance of dividend increases.

Therefore, after controlling the self-selection problem, I find consistent results in Table 3.9 and Table 3.10 that both the announcement returns and the net change in operating performance are higher for dividend increasing firms with the presence of large customers.

4.5.3. Different Value Consequences of Share Repurchases and Dividend Increases

I conclude that the presence of large customers has a different value consequence between share repurchases and dividends as two forms of corporate payout policy through the channels of bargaining position and relationship-specific investments.

4.5.4. Large Customers and the Selection between Share Repurchases and Dividend Increases

Furthermore, I analyse the relation between the presence of large customers and the managers' choice on the payout methods. Managers make decisions on the payout methods because share repurchases and dividend increases have different effects on the firms. For example, firms choose dividend payout to distribute relatively permanent cash and choose share repurchases to distribute temporary cash (Guay and Harford, 2000; Jagannathan, Stephens and Weisbach, 2000; Lee and Suh, 2011; Haw, Ho, Hu, and Zhang, 2011). The financial flexibility of a firm can be adjusted by making choices between dividends and share repurchases. Repurchasing firms have much more volatile cash flows and distributions than dividend-paying firms (Bonaimé, Hankins and Harford, 2013). Kahle (2002) shows that firms with a higher leverage ratio are more likely to increase dividends rather than repurchase shares, because firms with a dividend payout have more stable cash flows and therefore take on more debt. Therefore, I examine how the presence

of large customers affects the managers' choice on the payout methods between share repurchases and dividend increases.

Table 3.14 shows the probit regression of share repurchases. Share Repurchases is a dummy variable which equals one if the firm repurchases shares and equals zero otherwise. This is a sample of 8,042 repurchase events and 78,122 non-repurchase events from 1979 to 2013. I find that the coefficient of Large Customers is 0.189 (p-value=0.01). This means that the presence of large customers increases the likelihood that firms repurchase shares. The coefficient of Top Large Customer is 0.424 (p-value=0.01) and the coefficient of All Large Customers is 0.393 (p-value=0.01). The results imply that the probability of share repurchases is higher when the purchases made by the largest customer and all large customers are higher.

Table 3.15 shows the probit regression of dividend increases. This is a sample of 34,919 events of dividend increases and 30,395 events of no dividend increases from 1979 to 2013. Dividend Increases is a dummy variable which equals one if the firm increases dividends and equals zero otherwise. I find that the coefficient of Large Customers is -0.305 (p-value=0.01). This means that the presence of large customers reduces the likelihood that firms increase dividends. The coefficient of Top Large Customer is -1.596 (p-value=0.01) and the coefficient of All Large Customers is -1.412 (p-value=0.01). The results imply that the probability of dividend increases is lower when the purchases made by the largest customer and all large customers are higher.

In summary, the results of Table 3.14 and Table 3.15 indicate that the presence of large customers increases the probability of repurchasing shares and decreases the probability of increasing dividends. First, firms with large customers will have

higher risks, and they may put more effort into signalling their good future prospect by using share repurchases. Second, when large customers stop purchasing, then the firm will have a substantial reduction in cash flow so that they do not want to use dividend increases, which require more steady cash flow. Therefore, given the higher level of risks associated with large customers, firms with the presence of large customers are more likely to repurchase shares rather than to increase dividends.

4.5.5. Large Customers and the Level of Total Payout

Table 3.16 shows the relation between the presence of large customers and the level of total payout. The dependent variable is Total Payout which is defined as the sum of the amount of share repurchases and dividends. I find that the coefficient of Large Customers is -0.002 (p-value=0.01). This means that the presence of large customers reduces the level of total payout. The coefficient of Top Large Customer is -0.007 (p-value=0.01) and the coefficient of All Large Customers is -0.005 (p-value=0.01). The results imply that the level of total payout is lower when the purchases made by the largest customer and all large customers are higher. Therefore, the results of Table 3.16 are consistent with the prediction of hypothesis 1 that the presence of large customers reduces the level of total payout through the channel of the bargaining position.

4.6. Robustness Check

I report the robustness check in this section.

4.6.1. Large Customers and the Level of Share Repurchases

Table 3.17 shows the relation between the presence of large customers and the level of share repurchases. The dependent variable is Share Repurchases which is defined as the amount of share repurchases to total assets. I find that the coefficient

of Large Customers is -0.001 (p-value=0.08). This means that the presence of large customers reduces the level of share repurchases. The coefficient of Top Large Customer is -0.006 (p-value=0.01) and the coefficient of All Large Customers is -0.004 (p-value=0.01). The results imply that the level of share repurchases is lower when the purchases made by the largest customer and all large customers are higher. Therefore, the results of Table 3.6 are consistent with the prediction of Hypothesis 1 that the presence of large customers reduces the level of share repurchases through the channel of the bargaining position.

4.6.2. Large Customers and the Level of Dividends

Table 3.18 shows the relation between the presence of large customers and the level of dividends. The dependent variable is Dividends which is defined as the amount of dividends to total assets. I find that the coefficient of Large Customers is -0.003 (p-value=0.01). This means that the presence of large customers reduces the level of dividends. The coefficient of Top Large Customer is -0.014 (p-value=0.01) and the coefficient of All Large Customers is -0.006 (p-value=0.07). The results imply that the level of dividends is lower when the purchases made by the largest customer and all large customers are higher. Therefore, Table 3.14 supports the prediction of Hypothesis 1 that the presence of large customers reduces the level of dividends through the channel of relationship-specific investments.

4.6.3. Alternative Measures for the Level of Dividends

I use alternative proxies for the level of dividends to do the robustness check for the negative impact of large customers on the level of dividends. DIV/ME and DIV/NI are the two new measures of dividend increases. DIV/ME is defined as the amount of dividends to market value of equity. DIV/NI is defined as the amount of dividends to net income.

In Panel A of Table 3.19, the dependent variable is DIV/ME. The coefficients for the proxy variables of large customers are negative and significant. In Panel B of Table 3.19, the dependent variable is DIV/NI. The coefficients for the proxy variables of large customers are negative and significant. Both the results of Panel A and Panel B are consistent with Table 3.14 that the presence of large customers reduces the level of dividends.

4.7. Conclusion

I examine whether large customers affect corporate payout policy. I develop two hypotheses based on bargaining position and the relationship-specific investments. In terms of share repurchases, I find that both the cumulative abnormal return and the net change in operating performance around the announcement of share repurchases are lower with the presence of large customers. I also analyse the impact of large customers' bargaining position on the value of share repurchases. The results imply that the presence of large customers reduces the value of share repurchases through the perspective of bargaining position. In terms of dividends, I find that both the cumulative abnormal return and the net change in operating performance around the announcement of increase in dividends are higher with the presence of large customers. Also, I examine how the relationship-specific investments and the signalling effect of dividend increases affect the value of firms with the presence of large customers. The results suggest that the presence of large customers increases the value of dividend increases through the perspective of relationship-specific investments. Moreover, given the higher level of risks associated with large customers, firms with the presence of large customers are more likely to repurchase shares rather than to increase dividends. Finally, I find a

negative impact of large customers on the level of total payout through the channel of bargaining position. I conclude that the presence of large customers has a different value consequence between share repurchases and dividends as two forms of corporate payout policy either through the channel of bargaining position or the channel of relationship-specific investments.

Chapter 5. Conclusion

5.1. Findings and Implications

I investigate how the firm diversification affect the value of large customers and large suppliers. I also analyse the effect of large customers on the corporate payout policy.

In Chapter Two, I examine how firm diversification affects the value of large customers for shareholders. I develop three hypotheses based on risk reduction, relationship-specific investments, and bargaining position. I use the excess value as a measure of firm value, and find that the value of large customers for shareholders is lower in diversified firms than single-segment firms. More specifically, I find that the presence of large customers is associated with a reduction in the Excess Value when there is diversity in the investment opportunities across segments in a diversified firm, and that such reduction in excess value is larger when there is a higher diversity. Moreover, I examine the setting of a tariff cut which brings an exogenous change in the competitive environment, and find that a reduction in the level of large customers is associated with a decrease (an increase) in the value of single-segment firms (diversified firms). Furthermore, I find that both the announcement returns and the net change in ROA for diversifying M&As are lower with the presence of large customers. I conclude that the results support the hypothesis that the value of large customers for shareholders is lower in diversified firms than single-segment firms through the perspective of bargaining position.

Chapter Three examines the relation between firm diversification and the value of large suppliers for shareholders, and find that the value of large suppliers for

shareholders is higher in diversified firms. I find robust results to support Hypothesis 2 about the relationship-specific investments that the presence of large suppliers is positively valued by shareholders in diversified firms with relationship-specific investments. In addition, I analyse the impact of tariff cut on the competitive environment find that that a reduction in the ratio of the purchases made by all suppliers is associated with a decrease in excess value of diversified firms. In the event study of M&As, I find that the presence of large suppliers increases both the announcement return and the operating performance of a diversifying M&A. I conclude that the results support my hypothesis that the value of large suppliers for shareholders is higher in diversified firms through the perspective of relationship-specific investments.

Finally, in Chapter Four, I examine whether large customers affect corporate payout policy. In terms of share repurchases, I find that both the cumulative abnormal return and the net change in operating performance around the announcement of share repurchases are lower with the presence of large customers. I also analyse the impact of large customers' bargaining position on the value of share repurchases. The results imply that the presence of a large customer reduces the value of share repurchases through the perspective of bargaining position. In terms of dividends, I find that both the cumulative abnormal return and the net change in operating performance around the announcement of increase in dividends are higher with the presence of large customers. Also, I examine how the relationship-specific investments and the signalling effect of dividend increases affect the value of firms with the presence of large customers. The results suggest that the presence of a large customer increases the value of dividend increases through the perspective of relationship-specific investments. Moreover, given the higher level of

risks associated with large customers, firms with the presence of large customers are more likely to repurchase share rather than to increase dividends. Finally, I find a negative impact of large customers on the level of total payout through the channel of bargaining position. I conclude that the presence of large customers has a different value consequence between share repurchases and dividends as two forms of corporate payout policy either through the channel of bargaining position or the channel of relationship-specific investments.

5.2. Limitations

While extensive empirical analyses have been conducted in the thesis, some limitations still exist due to the following reasons.

First, Financial Accounting Standards Board (FASB) No.14 sets a threshold at the level of 10% of total annual sales for the mandatory reporting of large customers. This implies that a firm with a maximum of 9.9% sales to its largest customer can be treated in the same way as a firm with a maximum of 1% sales to its largest customer in the empirical analysis if both firms choose not to report their large customers. This means that I cannot fully differentiate the impact of relatively large customers to the firms below the 10% threshold. Moreover, since I use the data of sales to large customers to construct the measure about large suppliers, a similar reasoning of the limitation applies to large suppliers too.

Second, since I do not have the data about the specific contract terms between customers and suppliers, this represents another limitation for the empirical analysis that I can conduct. For example, while the price of the sales to large customers (or the price for the purchases from large suppliers) is more directly related to the bargaining position, I do not have such data and therefore, I can only examine the

bargaining position from other less direct perspectives such as trade credit. Moreover, the contract terms between customers and suppliers may specify the duration of the relationship, the amount of relationship-specific investments, and so on. Since I do not have these data that are important for us to examine the customer-supplier relationship more accurately, this limits the extent of the empirical analysis that I can conduct.

Third, while I measure large suppliers as the ratios of the purchase made by a firm from its suppliers to the firm's cost of goods sold, this does not fully take into account the specificity of products or the expertise of large suppliers. More specialised products and higher expertise of large suppliers will result in a higher bargaining position of large suppliers. For example, the specificity of products and the expertise of large suppliers are positively associated with the degree of the hold-up problem. However, since I do not have more detailed data about the specificity of products or the expertise of large suppliers, this represents another limitation of my study.

5.3. Further Research

First, this thesis has discussed the effects of firm diversification on the value of large customers and large suppliers. Firm diversification and firm refocusing are the two main activities in which firms engage during their life cycle. Berger and Ofek (1999) find that a firm refocusing significantly enhances shareholder wealth. The cumulative abnormal returns around the refocusing-related announcement is approximately 7.3%. Daley, Mehrotra, and Sivakumar (1996) find that firms remove unrelated businesses through cross-industry spinoffs and managers can focus on the operation of core business. This results in a significant value creation around the announcement of cross-industry spinoffs. Therefore, I could examine how the

corporate refocusing or spinoff is affected by the presence of large customers and large suppliers.

Second, this thesis finds the association between large customers and corporate payout policy. I can also examine what is the value consequence of payout policy in the firms with the presence of large suppliers. In addition, I can analyse the effects of large customers on firms' payout policy in different stages of firms including start-up, growth, mature and so on. I can further analyse if large customers have different effects on cash dividends and stock dividends.

Third, while I have used US data in the thesis, I can extend the analysis to international data because large customers and/or large suppliers are prevalent in other countries in the world. For example, Carillion plc was one of the largest British firms in the facilities management industry. The firm had strong power over its suppliers to dictate payment arrangements. A few years ago, Carillion was able to double its payment periods to its suppliers to 120 days (Plimmer, 2018). However, Carillion collapsed in January 2018, which resulted in a devastating impact on their suppliers. Some suppliers went bankrupt due to the money owned by Carillion. Therefore, I can extend the analysis on the value consequence of firms with the presence of large customers to UK data.

Tables

Table 1.1. Univariate Statistics

This table shows univariate statistics. I use a sample of 12677 firms from 1976 to 2013 with 110084 firm-year observations. Panel A shows the univariate statistics. Excess Value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. Panel B shows the univariate statistics on Excess Value for diversified firms and single-segment firms.

Panel A: Univariate Statistics

	Mean	Median	25th Pctl	75th Pctl	Std Dev
Excess Value	-0.0232	-0.0356	-0.4289	0.3592	0.6615
Firm Diversification	0.3132	0.0000	0.0000	1.0000	0.4638
Large Customer	0.0977	0.0000	0.0000	0.0000	0.2969
Top Large Customer (subsample)	0.1933	0.1500	0.1087	0.2300	0.1518
All Large Customers (subsample)	0.2302	0.1700	0.1100	0.2987	0.1790
Size	19.3155	19.0869	17.9221	20.4982	1.8249
EBIT/SALES	0.0581	0.0691	0.0218	0.1255	0.1723
CAPX/SALES	0.0838	0.0403	0.0196	0.0840	0.1328
Leverage	0.1916	0.1531	0.0177	0.3013	0.1883

Panel B: Univariate Statistics on Excess Value

	Excess Value				
	Mean	Median	25th Pctl	75th Pctl	Std Dev
Diversified firms	-0.0923	-0.1007	-0.4376	0.2501	0.5808
Single-segment firms	0.0083	0.0000	-0.4237	0.4160	0.6929

Table 1.2. Univariate Analysis of Excess Value for Diversified Firms

This table shows univariate analysis of excess value for diversified firm. I use a sample of 4765 diversified firms from 1976 to 2013 with 34481 firm-year observations. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. I conduct the mean test and the median test for the difference, and report the p-value in the table.

Excess Value Sub-sample: Diversified Firms				
	With Large Customers	Without Large Customers	Difference	P-value
Mean	-0.1445	-0.0807	-0.0638	0.01
Median	-0.1568	-0.0927	-0.0641	0.01

Table 1.3. Firm Diversification and the Value of Large Customers

This table shows the relation between firm diversification and the value of large customers. I use a sample of 12677 firms from 1976 to 2013 with 110084 firm-year observations. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the top large customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of Capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. I cluster the standard errors by firm and year. P-value is noted in the parentheses.

	Excess Value		
Intercept	-7.699	-7.712	-7.709
	(0.01)	(0.01)	(0.01)
Firm Diversification	-0.103	-0.101	-0.102
	(0.01)	(0.01)	(0.01)
Large Customers	0.022		
	(0.01)		
Firm Diversification* Large Customers	-0.086		
	(0.01)		
Top Large Customer		0.180	
		(0.01)	
Firm Diversification * Top Large Customer		-0.426	
		(0.01)	
All Large Customers			0.127
			(0.01)
Firm Diversification * All Large Customers			-0.331
			(0.01)
Size	1.168	1.169	1.169
	(0.01)	(0.01)	(0.01)
EBIT/SALES	0.061	0.062	0.062
	(0.01)	(0.01)	(0.01)
CAPX/SALES	0.286	0.285	0.285
	(0.01)	(0.01)	(0.01)
Size t-1	-0.272	-0.272	-0.272
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-1	-0.033	-0.034	-0.033
	(0.21)	(0.20)	(0.20)
CAPX/SALES t-1	0.120	0.120	0.120
	(0.01)	(0.01)	(0.01)
Size t-2	-0.196	-0.196	-0.196
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-2	-0.045	-0.043	-0.043
	(0.02)	(0.03)	(0.03)
CAPX/SALES t-2	0.428	0.427	0.428
	(0.01)	(0.01)	(0.01)
Leverage	-0.154	-0.153	-0.153
	(0.01)	(0.01)	(0.01)
Size Squared	-0.016	-0.016	-0.016
	(0.01)	(0.01)	(0.01)
Number of Observations	110084	110084	110084
Adjusted R Squared	0.19	0.19	0.19

Table 1.4. Diversity and Unrelatedness

This table shows how diversity and unrelatedness affect the relation between firm diversification and the value of large customers. I use a sample of 12677 firms from 1976 to 2013 with 110084 firm-year observations. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. In Panel A, Diversity is the ratio of the standard deviation of segment asset-weighted q to the equally-weighted average q across segments. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the top large customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of Capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. In Panel B, Unrelatedness is a dummy variable which equals one if the segments of a diversified firm do not operate in the same industries, and equals zero otherwise. I cluster the standard errors by firm and year. P-value is noted in the parentheses.

Table 1.4. (Continued)

Panel A: Diversity

	Excess Value		
Intercept	-6.390	-6.400	-6.398
	(0.01)	(0.01)	(0.01)
Firm Diversification	-0.095	-0.094	-0.094
	(0.01)	(0.01)	(0.01)
Large Customers	0.023		
	(0.01)		
Firm Diversification * Large Customers	-0.063		
	(0.01)		
Firm Diversification * Large Customers * Diversity	-0.179		
	(0.02)		
Top Large Customer		0.162	
		(0.01)	
Firm Diversification * Top Large Customer		-0.322	
		(0.01)	
Firm Diversification * Top Large Customer * Diversity		-0.798	
		(0.05)	
All Large Customers			0.116
			(0.01)
Firm Diversification * All Large Customers			-0.242
			(0.01)
Firm Diversification * All Large Customers * Diversity			-0.795
			(0.03)
Size	0.992	0.992	0.992
	(0.01)	(0.01)	(0.01)
EBIT/SALES	1.545	1.543	1.544
	(0.01)	(0.01)	(0.01)
CAPX/SALES	0.303	0.302	0.302
	(0.01)	(0.01)	(0.01)
Size t-1	-0.183	-0.183	-0.183
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-1	-0.643	-0.641	-0.642
	(0.01)	(0.01)	(0.01)
CAPX/SALES t-1	0.058	0.058	0.058
	(0.09)	(0.09)	(0.09)
Size t-2	-0.234	-0.234	-0.234
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-2	-0.114	-0.112	-0.113
	(0.01)	(0.01)	(0.01)
CAPX/SALES t-2	0.277	0.277	0.277
	(0.01)	(0.01)	(0.01)
Leverage	-0.129	-0.128	-0.128
	(0.01)	(0.01)	(0.01)
Size Squared	-0.013	-0.013	-0.013
	(0.01)	(0.01)	(0.01)
Number of Observations	110084	110084	110084
Adjusted R-Squared	0.23	0.23	0.22

Table 1.4. (Continued)

Panel B: Unrelatedness

	Excess Value		
Intercept	-7.700	-7.712	-7.709
	(0.01)	(0.01)	(0.01)
Firm Diversification	-0.101	-0.101	-0.102
	(0.01)	(0.01)	(0.01)
Large Customers	0.023		
	(0.01)		
Firm Diversification * Large Customers	-0.065		
	(0.01)		
Firm Diversification * Large Customers * Unrelatedness	-0.008		
	(0.72)		
Top Large Customer		0.180	
		(0.01)	
Firm Diversification * Top Large Customer		-0.486	
		(0.01)	
Firm Diversification * Top Large Customer * Unrelatedness		0.072	
		(0.57)	
All Large Customers			0.127
			(0.01)
Firm Diversification * All Large Customers			-0.344
			(0.01)
Firm Diversification * All Large Customers * Unrelatedness			0.016
			(0.88)
Size	1.168	1.169	1.169
	(0.01)	(0.01)	(0.01)
EBIT/SALES	0.061	0.063	0.062
	(0.01)	(0.01)	(0.01)
CAPX/SALES	0.286	0.285	0.285
	(0.01)	(0.01)	(0.01)
Size t-1	-0.272	-0.272	-0.272
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-1	-0.033	-0.034	-0.033
	(0.20)	(0.20)	(0.20)
CAPX/SALES t-1	0.120	0.120	0.120
	(0.01)	(0.01)	(0.01)
Size t-2	-0.196	-0.196	-0.196
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-2	-0.044	-0.043	-0.043
	(0.02)	(0.03)	(0.03)
CAPX/SALES t-2	0.428	0.428	0.428
	(0.01)	(0.01)	(0.01)
Leverage	-0.153	-0.153	-0.153
	(0.01)	(0.01)	(0.01)
Size Squared	-0.016	-0.016	-0.016
	(0.01)	(0.01)	(0.01)
Number of Observations	110084	110084	110084
Adjusted R-Squared	0.19	0.19	0.19

Table 1.5. Large Customers and Segment-level Resource Transfer

This table shows the relation between large customers and segment-level resource transfer. I use a sample of 3581 diversified firms from 1976 to 2013 with 75031 segment-year observations. Segment-level Resource Transfer is the difference between the industry-adjusted investment in a segment and the weighted average industry-adjusted investments across all the segments of a firm (see text for details). Large Customer is a dummy variable which equals one if a segment has at least one large customer, and equals zero otherwise. Weak Investment Opportunities is a dummy variable which equals one if the segment q is below the firm's average q, and equals zero otherwise. Weak Resource-weighted Investment Opportunities is a dummy variable which equals one if the resources-weighted segment q is below the firm's resources-weighted average q, and equals zero otherwise, where the resources are measured by the segment's beginning-of-year share of total sales. Weak Investment Opportunities and Weak Resource-weighted Investment Opportunities is a dummy variable which equals one if a segment has both Weak Investment Opportunities and Weak Resource-weighted Investment Opportunities, and equals zero otherwise. Inverse of Average Investment Opportunities equals one divided by the equally-weighted average q across segments. Diversity is the ratio of the standard deviation of segment asset-weighted q to the equally-weighted average q across segments. Firm Size is the logarithm of total sales. I cluster the standard errors by firm and year. P-value is noted in the parentheses.

	Segment-level Resource Transfer		
Intercept	-0.005	-0.005	-0.005
	(0.01)	(0.01)	(0.01)
Large Customers	-0.004	-0.002	-0.002
	(0.01)	(0.02)	(0.05)
Weak Investment Opportunities	-0.001		
	(0.34)		
Large Customers * Weak Investment Opportunities	0.004		
	(0.01)		
Weak Resource-weighted Investment Opportunities		-0.001	
		(0.01)	
Large Customers * Weak Resource-weighted Investment Opportunities		0.003	
		(0.05)	
Weak Investment Opportunities and Weak Resource-weighted Investment Opportunities			-0.001
			(0.01)
Large Customers * Weak Investment Opportunities and Weak Resource-weighted Investment Opportunities			0.007
			(0.01)
Inverse of Average Investment Opportunities	-0.006	-0.006	-0.006
	(0.01)	(0.01)	(0.01)
Diversity	-0.002	-0.002	-0.002
	(0.01)	(0.01)	(0.01)
Firm Size	0.001	0.001	0.001
	(0.01)	(0.01)	(0.01)
Number of Observations	75031	75031	75031
Adjusted R Squared	0.01	0.01	0.01

Table 1.6. Trade Credit

This table shows the trade credit based on supplier-customer pairs (i.e., sales of a supplier to specific customers). I use a sample of 3309 firms from 1976 to 2013 with 18780 firm-year observations. Panel A shows the relation between large customers and suppliers' accounts receivable. Supplier's Accounts Receivable is calculated as log (1+(supplier's accounts receivable)*(fraction of supplier's overall sales to the customer)). Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the top large customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of sales. M/B is the market value of equity plus assets minus the book value of equity, divided by the assets. Leverage is the ratio of long-term debts to assets. Corporate Cash Holdings is the ratio of cash and marketable securities to assets. Tangibility is the ratio of plant, property and equipment to assets. Dividends is the ratio of dividends to assets. Panel B shows the relation between large customers and customers' accounts payable. Customer's Accounts Payable is calculated as (1+ (customer firm's accounts payable) * (supplier's sales to the customer/customer's overall costs of goods sold)). P-value is noted in the parentheses.

Panel A: Supplier's Accounts Receivable

	Supplier's Accounts Receivable		
Intercept	-10.020	-9.921	-9.640
	(0.01)	(0.01)	(0.01)
Firm Diversification	-0.179	-0.458	-0.329
	(0.01)	(0.01)	(0.01)
Large Customers	0.804		
	(0.01)		
Firm Diversification * Large Customers	0.049		
	(0.07)		
Top Large Customer		1.886	
		(0.01)	
Firm Diversification * Top Large Customer		1.657	
		(0.01)	
All Large Customers			1.191
			(0.01)
Firm Diversification * All Large Customers			0.551
			(0.01)
Size	0.620	0.634	0.620
	(0.01)	(0.01)	(0.01)
M / B	0.013	0.002	0.005
	(0.01)	(0.65)	(0.34)
Leverage	-0.813	-0.955	-0.885
	(0.01)	(0.01)	(0.01)
Corporate Cash Holdings	-1.478	-1.589	-1.548
	(0.01)	(0.01)	(0.01)
Tangibility	-0.597	-0.596	-0.576
	(0.01)	(0.01)	(0.01)
Dividends	-1.430	-1.983	-1.898
	(0.01)	(0.01)	(0.01)
Number of Observations	18780	18780	18780
Adjusted R-Squared	0.68	0.69	0.66

Table 1.6 (Continued)

Panel B: Customer's Accounts Payable

	Customer's Accounts Payable		
Intercept	-9.913	-9.961	-9.728
	(0.01)	(0.01)	(0.01)
Firm Diversification	-0.188	-0.418	-0.257
	(0.01)	(0.01)	(0.01)
Large Customers	0.741		
	(0.01)		
Firm Diversification * Large Customers	0.089		
	(0.01)		
Top Large Customer		2.095	
		(0.01)	
Firm Diversification * Top Large Customer		1.618	
		(0.01)	
All Large Customers			1.479
			(0.01)
Firm Diversification * All Large Customers			0.397
			(0.01)
Size	0.603	0.619	0.606
	(0.01)	(0.01)	(0.01)
M / B	0.018	0.008	0.011
	(0.01)	(0.20)	(0.10)
Leverage	-0.627	-0.744	-0.690
	(0.01)	(0.01)	(0.01)
Corporate Cash Holdings	-0.917	-1.047	-1.023
	(0.01)	(0.01)	(0.01)
Tangibility	-0.402	-0.405	-0.383
	(0.01)	(0.01)	(0.01)
Dividends	-1.506	-1.937	-1.812
	(0.01)	(0.01)	(0.01)
Number of Observations	18780	18780	18780
Adjusted R-Squared	0.53	0.55	0.53

Table 1.7. The Setting of Tariff Cut: First-Stage Regressions

This table shows the relation between a tariff cut and the change in large customers. I use a sample of 2913 firms in the manufacturing industries from 1976 to 2005 with 22301 firm-year observations. ΔX indicates the change in variable X from year t-1 to year t+1. Top Large Customer is the ratio of the purchases made by the top large customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Tariff Cut is a dummy variable which equals one if the percentage reduction of tariff in the industry of the segment that a large customer belongs to is 2 times higher than its industry median percentage change, and equals zero otherwise. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of Capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. The variable S&P is a dummy variable that equals one when the firm is part of the S&P index and equals 0 otherwise. PNDIV is the fraction of all firms in the industry that are diversified firms. PSDIV is the fraction of industry sales accounted for by diversified firms. GDP Growth is the growth rate in real GDP. Contraction is the number of months in a year when the economy was in recession. A_TA, A_EBIT, and A_CAPX are the average values of the variables Size, EBIT/SALES, and CAPX/SALES in the previous three years. MAJOREX is a dummy variable that equals one if the firm is listed on the NASDAQ, NYSE, or AMEX, and equals zero otherwise. FOREIGN is a dummy variable that equals one if the firm is incorporated outside the United States and equals zero otherwise. I cluster the standard errors by firm and year. P-value is noted in the parentheses.

Table 1.7 (Continued)

	Δ Top Large Customer	Δ All Large Customers		Firm Diversification
Intercept	0.027	0.070	Intercept	-5.116
	(0.37)	(0.14)		(0.01)
Tariff Cut	-0.003	-0.004	Size	0.003
	(0.01)	(0.01)		(0.94)
Size	-0.009	-0.014	EBIT/SALES	0.018
	(0.01)	(0.02)		(0.88)
EBIT/SALES	0.008	-0.002	CAPX/SALES	-0.922
	(0.23)	(0.88)		(0.01)
CAPX/SALES	0.014	0.020	Size t-1	-0.190
	(0.20)	(0.32)		(0.01)
Size t-1	0.006	0.006	EBIT/SALES t-1	0.149
	(0.05)	(0.27)		(0.40)
EBIT/SALES t-1	0.003	0.009	CAPX/SALES t-1	0.023
	(0.74)	(0.56)		(0.94)
CAPX/SALES t-1	-0.013	-0.020	Size t-2	-0.353
	(0.23)	(0.31)		(0.01)
Size t-2	0.000	0.001	EBIT/SALES t-2	0.356
	(0.92)	(0.78)		(0.07)
EBIT/SALES t-2	-0.006	-0.010	CAPX/SALES t-2	-0.100
	(0.26)	(0.35)		(0.77)
CAPX/SALES t-2	-0.009	-0.015	S&P	0.106
	(0.37)	(0.40)		(0.01)
Leverage	0.001	0.002	PNDIV	2.776
	(0.54)	(0.68)		(0.01)
Size Squared	0.001	0.001	PSDIV	0.203
	(0.26)	(0.08)		(0.01)
			GDP Growth	0.015
				(0.01)
			GDP Growth t-1	0.016
				(0.01)
			Contraction	0.019
				(0.01)
			Contraction t-1	0.019
				(0.01)
			A_AT	0.733
				(0.01)
			A_EBIT	-0.578
				(0.03)
			A_CAPX	-1.920
				(0.01)
			MAJOREX	-0.043
				(0.07)
			Foreign	-0.325
				(0.01)
Number of Observations	22301	22301	Number of Observations	22301
Adjusted R Squared	0.01	0.01	Pseudo R Squared	0.25

Table 1.8. The Setting of Tariff Cut: Second-Stage Regressions

This table shows how a tariff cut affects the relation between firm diversification and the value of large customers. I use a sample of 2913 firms from 1976 to 2005 with 22301 firm-year observations. ΔX indicates the change in variable X from year t-1 to year t+1. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Tariff Cut is a dummy variable which equals one if the percentage reduction of tariff in the industry of the segment that a large customer belongs to is 2 times higher than its industry median percentage change, and equals zero otherwise. Top Large Customer is the ratio of the purchase made by the top large customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. This table reports the regressions using the instrumental variables approach. I follow Campa and Kedia (2002) and use the estimated probability of diversification from the probit model reported in Table 1.7 as a generated instrument for the diversification status (see text for details). I also use the Change in Top Large Customer and Change in All Large Customers from the first stage reported in Table 1.7 as the generated instruments for the presence of large customers (see text for details). I cluster the standard errors by firm and year. P-value is noted in the parentheses.

	Δ Excess Value	
Intercept	-0.195	-0.339
	(0.37)	(0.14)
Firm Diversification	0.052	0.045
	(0.01)	(0.01)
Δ Top Large Customer	7.265	
	(0.01)	
Firm Diversification * Δ Top Large Customer	-17.759	
	(0.01)	
Δ All Large Customers		6.190
		(0.01)
Firm Diversification * Δ All Large Customers		-10.813
		(0.02)
Size	0.346	0.380
	(0.01)	(0.01)
EBIT/SALES	-0.091	-0.066
	(0.06)	(0.18)
CAPX/SALES	0.265	0.283
	(0.01)	(0.01)
Size t-1	-0.653	-0.674
	(0.01)	(0.01)
EBIT/SALES t-1	0.022	-0.007
	(0.63)	(0.88)
CAPX/SALES t-1	-0.075	-0.117
	(0.28)	(0.08)
Size t-2	0.323	0.327
	(0.01)	(0.01)
EBIT/SALES t-2	0.084	0.099
	(0.02)	(0.01)
CAPX/SALES t-2	-0.213	-0.189
	(0.01)	(0.01)
Leverage	0.012	0.005
	(0.40)	(0.74)
Size Squared	-0.001	-0.001
	(0.39)	(0.13)
Number of Observations	22301	22301
Adjusted R Squared	0.11	0.11

Table 1.9. Univariate Statistics for the Sample of M&As

This table shows the univariate statistics for the sample of M&As. I use a sample of 7282 M&As from 1979 to 2013. CAR (-1, 1) is the cumulative abnormal return over days (-1, 1) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). ROA is the ratio of EBIT to assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching (see text for details). Diversifying M&As is a dummy variable that equals one if both conditions are met: (1) the acquirer's main two-digit SIC code is different from the target's main two-digit SIC code, and (2) the acquirer's Herfindahl index calculated based on segment sales at year t+1 is smaller than the acquirer's Herfindahl index calculated based on segment sales at year t-1, and equals zero otherwise. Presence of Large Customers is a dummy variable that equals one if there exists at least one large customer in the combined firm after M&As, and equals zero otherwise. Unfriendly is a dummy variable that equals one if an M&A takes place in an unfriendly way, and equals zero otherwise. Private Target is a dummy variable if the target is a private firm, and equals zero otherwise. Cash Payment is a dummy variable that equals one if the method of payment is cash for a deal, and equals zero otherwise. Deal Value is the ratio of the deal value to the market capitalization of the acquirer. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Dividends is the ratio of dividends to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years.

	Mean	Median	25th Pctl	75th Pctl	Std Dev
CAR (-1, 1)	0.0069	0.0026	-0.0260	0.0352	0.0700
Net ΔROA	0.0006	-0.0013	-0.0634	0.0619	0.1734
Diversifying M&As	0.1313	0.0000	0.0000	0.0000	0.3377
Presence of Large Customers	0.1633	0.0000	0.0000	0.0000	0.3696
Unfriendly	0.0147	0.0000	0.0000	0.0000	0.1203
Private Target	0.7172	1.0000	0.0000	1.0000	0.4504
Cash Payment	0.2347	0.0000	0.0000	0.0000	0.4238
Deal Value	4.2606	0.0351	0.0000	0.1574	344.0805
Size	19.6924	19.5809	18.3133	20.9188	1.8987
M / B	2.5720	1.7744	1.2643	2.8743	2.2396
Capital Expenditure	0.0625	0.0454	0.0238	0.0788	0.0648
R&D	0.0670	0.0082	0.0000	0.0883	0.1303
Dividends	0.0119	0.0000	0.0000	0.0137	0.0247
Leverage	0.1601	0.1192	0.0067	0.2635	0.1658
Cash Flow	0.0334	0.0566	0.0227	0.0945	0.1672
Tangibility	0.4302	0.3441	0.1701	0.6003	0.3270
Sales Growth	0.4127	0.1760	0.0506	0.4357	0.8514
Cash Flow Volatility	0.0812	0.0331	0.0161	0.0801	0.1356
ROA t-1	0.0920	0.1024	0.0548	0.1557	0.1314

Table 1.10. Large Customers and the Announcement Returns of M&As

This table shows the relation between announcement returns and the presence of large customers. I use a sample of 7282 M&As from 1979 to 2013. CAR (-1, 1) is the cumulative abnormal return over days (-1, 1) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Diversifying M&As is a dummy variable that equals one if both conditions are met: (1) the acquirer's main two-digit SIC code is different from the target's main two-digit SIC code, and (2) the acquirer's Herfindahl index calculated based on segment sales at year t+1 is smaller than the acquirer's Herfindahl index calculated based on segment sales at year t-1, and equals zero otherwise. Presence of Large Customers is a dummy variable that equals one if there exists at least one large customer in the combined firm after M&As, and equals zero otherwise. Unfriendly is a dummy variable that equals one if an M&A takes place in an unfriendly way, and equals zero otherwise. Private Target is a dummy variable if the target is a private firm, and equals zero otherwise. Cash Payment is a dummy variable that equals one if the method of payment is cash for a deal, and equals zero otherwise. Deal Value is the ratio of deal value to the market capitalization of acquirer. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Dividends is the ratio of dividends to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Inverse Mills Ratio is calculated based the estimates of a probit model, in which the dependent variable is Diversifying M&As and the independent variables are the same as the independent variables as reported in Column 3 of Table 1.7. P-value is noted in the parentheses.

	CAR (-1, 1)	
Intercept	0.064	0.039
	(0.01)	(0.01)
Diversifying M&As	0.001	0.001
	(0.97)	(0.62)
Presence of Large Customers	0.008	0.008
	(0.01)	(0.01)
Diversifying M&As * Presence of Large Customers	-0.011	-0.012
	(0.08)	(0.07)
Unfriendly	0.011	0.012
	(0.10)	(0.09)
Private Target	0.015	0.015
	(0.01)	(0.01)
Cash Payment	0.011	0.010
	(0.01)	(0.01)
Deal Value	-0.001	-0.001
	(0.80)	(0.84)
Size	-0.004	-0.004
	(0.01)	(0.01)
M / B	-0.001	-0.001
	(0.23)	(0.07)
Capital Expenditure	-0.046	-0.055
	(0.01)	(0.01)
R&D	-0.035	-0.037
	(0.01)	(0.01)
Dividends	-0.071	-0.060
	(0.04)	(0.08)
Leverage	0.006	0.006
	(0.26)	(0.32)
Cash Flow	-0.014	-0.014
	(0.02)	(0.02)
Tangibility	0.012	0.013
	(0.01)	(0.01)
Sales Growth	-0.001	-0.001
	(0.93)	(0.45)
Cash Flow Volatility	-0.003	-0.005
	(0.72)	(0.54)
Inverse Mills Ratio		0.051
		(0.01)
Number of Observations	7282	7282
Adjusted R Squared	0.03	0.04

Table 1.11. Large Customers and the Operating Performance for M&As

This table shows the relation between the operating performance and the presence of large customers. I use a sample of 6879 M&As from 1979 to 2013. ROA is the ratio of EBIT to assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching (see text for details). Diversifying M&As is a dummy variable that equals one if the acquirer's Herfindahl index calculated based on segment sales at year t+1 is smaller than the acquirer's Herfindahl index calculated based on segment sales at year t-1, and equals zero otherwise. Presence of Large Customers is a dummy variable that equals one if there exists at least one large customer in the combined firm after M&As, and equals zero otherwise. Unfriendly is a dummy variable that equals one if an M&A takes place in an unfriendly way, and equals zero otherwise. Private Target is a dummy variable if the target is a private firm, and equals zero otherwise. Cash Payment is a dummy variable that equals one if the method of payment is cash for a deal, and equals zero otherwise. Deal Value is the ratio of the deal value to the market capitalization of the acquirer. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Dividends is the ratio of dividends to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Inverse Mills Ratio is calculated based the estimates of a probit model, in which the dependent variable is Diversifying M&As and the independent variables are the same as the independent variables as reported in Column 3 of Table 1.7. P-value is noted in the parentheses.

	Net ROA Change	
Intercept	-0.225	-0.151
	(0.01)	(0.01)
Diversifying M&As	-0.001	-0.002
	(0.91)	(0.76)
Presence of Large Customers	0.006	0.006
	(0.33)	(0.35)
Diversifying M&As *Presence of Large Customers	-0.030	-0.029
	(0.07)	(0.08)
Unfriendly	-0.015	-0.014
	(0.39)	(0.42)
Private Target	0.012	0.011
	(0.02)	(0.02)
Cash Payment	0.014	0.014
	(0.01)	(0.01)
Deal Value	-0.001	-0.001
	(0.05)	(0.05)
Size	0.013	0.011
	(0.01)	(0.01)
M / B	0.001	0.005
	(0.18)	(0.01)
Capital Expenditure	-0.044	-0.105
	(0.24)	(0.02)
R&D	-0.131	-0.104
	(0.01)	(0.01)
Dividends	-0.123	-0.170
	(0.17)	(0.06)
leverage	-0.293	-0.009
	(0.01)	(0.55)
Tangibility	-0.225	0.020
	(0.01)	(0.02)
Sales Growth	-0.001	-0.004
	(0.91)	(0.19)
Cash Flow Volatility	0.006	-0.146
	(0.33)	(0.01)
ROA t-1	-0.030	-0.355
	(0.07)	(0.01)
Inverse Mills Ratio		-0.046
		(0.20)
Number of Observations	6879	6879
Adjusted R Squared	0.05	0.06

Table 1.12. Probit Regression

This table shows the probit regression. I use a sample of 12677 firms from 1976 to 2013 with 110084 firm-year observations. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. The variable S&P is a dummy variable that equals one when the firm is part of the S&P index and equals 0 otherwise. PNDIV is the fraction of all firms in the industry that are diversified firms, PSDIV is the fraction of industry sales accounted for by diversified firms. GDP Growth is the growth rate in real GDP. Contraction is the number of months in a year when the economy was in recession. A_TA, A_EBIT, and A_CAPX are the average values of the variables Size, EBIT/SALES, and CAPX/SALES in the previous three years. MAJOREX is a dummy variable that equals one if the firm is listed on NASDAQ, NYSE, or AMEX, and equals zero otherwise. FOREIGN is a dummy variable that equals one if the firm is incorporated outside the United States and equals zero otherwise. P-value is noted in the parentheses.

	Firm Diversification
Intercept	-4.549
	(0.01)
Size	0.072
	(0.01)
EBIT/SALES	-0.123
	(0.01)
CAPX/SALES	-0.200
	(0.01)
Size t-1	-0.066
	(0.01)
EBIT/SALES t-1	-0.094
	(0.16)
CAPX/SALES t-1	0.067
	(0.44)
Size t-2	0.063
	(0.02)
EBIT/SALES t-2	0.124
	(0.07)
CAPX/SALES t-2	-0.130
	(0.17)
S&P	0.111
	(0.01)
PNDIV	2.939
	(0.01)
PSDIV	0.073
	(0.01)
GDP Growth	0.014
	(0.01)
GDP Growth t-1	0.017
	(0.01)
Contraction	0.008
	(0.01)
Contraction t-1	0.008
	(0.01)
A_AT	0.089
	(0.01)
A_EBIT	-0.152
	(0.12)
A_CAPX	-0.816
	(0.01)
MAJOREX	-0.002
	(0.87)
Foreign	-0.090
	(0.01)
Number of Observations	110084
Pseudo R Squared	0.24

Table 1.13. Heckman Two-Stage Estimation and Instrumental Variables Approach

This table shows the robustness checks using the Heckman two-stage estimation and the instrumental variables approach. I use a sample of 12677 firms from 1976 to 2013 with 110084 firm-year observations. Panel A shows the second stage of the Heckman estimation. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the top large customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. Inverse Mills Ratio is calculated based on the estimates in the probit regression reported in Table 1.4 (see text for details). Panel B reports the regressions using instrumental variables approach. I follow Campa and Kedia (2002) and use the estimated probability of diversification from the probit model reported in Table 1.4 as a generated instrument for the diversification status (see text for details). I cluster the standard errors by firm and year. P-value is noted in the parentheses.

Panel A: Second Stage of Heckman Estimation

	Excess Value		
Intercept	-7.874	-7.885	-7.883
	(0.01)	(0.01)	(0.01)
Firm Diversification	0.175	0.175	0.175
	(0.01)	(0.01)	(0.01)
Large Customers	0.021		
	(0.01)		
Firm Diversification * Large Customers	-0.083		
	(0.01)		
Top Large Customer		0.176	
		(0.01)	
Firm Diversification * Top Large Customer		-0.417	
		(0.01)	
All Large Customers			0.125
			(0.01)
Firm Diversification * All Large Customers			-0.324
			(0.01)
Size	1.175	1.176	1.176
	(0.01)	(0.01)	(0.01)
EBIT/SALES	0.059	0.061	0.060
	(0.01)	(0.01)	(0.01)
CAPX/SALES	0.293	0.292	0.292
	(0.01)	(0.01)	(0.01)
Size t-1	-0.270	-0.270	-0.270
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-1	-0.033	-0.034	-0.034
	(0.20)	(0.20)	(0.20)
CAPX/SALES t-1	0.127	0.127	0.127
	(0.01)	(0.01)	(0.01)
Size t-2	-0.202	-0.202	-0.202
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-2	-0.051	-0.050	-0.050
	(0.01)	(0.01)	(0.01)
CAPX/SALES t-2	0.447	0.446	0.446
	(0.01)	(0.01)	(0.01)
Leverage	-0.159	-0.158	-0.159
	(0.01)	(0.01)	(0.01)
Size Squared	-0.016	-0.016	-0.016
	(0.01)	(0.01)	(0.01)
Inverse Mills Ratio	-0.180	-0.179	-0.179
	(0.01)	(0.01)	(0.01)
Number of Observations	110084	110084	110084
Adjusted R Squared	0.19	0.19	0.19

Table 1.13 (Continued)

Panel B: Instrumental Variables Approach

	Excess Value		
Intercept	-8.027	-8.043	-8.036
	(0.01)	(0.01)	(0.01)
Firm Diversification	-0.139	-0.141	-0.141
	(0.01)	(0.01)	(0.01)
Large Customers	0.040		
	(0.01)		
Firm Diversification * Large Customers	-0.110		
	(0.01)		
Top Large Customer		0.253	
		(0.01)	
Firm Diversification * Top Large Customer		-0.477	
		(0.01)	
All Large Customers			0.182
			(0.01)
Firm Diversification * All Large Customers			-0.362
			(0.01)
Size	1.186	1.187	1.187
	(0.01)	(0.01)	(0.01)
EBIT/SALES	0.051	0.052	0.052
	(0.03)	(0.02)	(0.02)
CAPX/SALES	0.298	0.297	0.297
	(0.01)	(0.01)	(0.01)
Size t-1	-0.272	-0.272	-0.272
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-1	-0.039	-0.040	-0.040
	(0.14)	(0.13)	(0.13)
CAPX/SALES t-1	0.115	0.114	0.114
	(0.01)	(0.01)	(0.01)
Size t-2	-0.200	-0.200	-0.200
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-2	-0.079	-0.077	-0.077
	(0.01)	(0.01)	(0.01)
CAPX/SALES t-2	0.407	0.404	0.405
	(0.01)	(0.01)	(0.01)
Leverage	-0.187	-0.186	-0.186
	(0.01)	(0.01)	(0.01)
Size Squared	-0.016	-0.016	-0.016
	(0.01)	(0.01)	(0.01)
Number of Observations	110084	110084	110084
Adjusted R Squared	0.19	0.19	0.19

Table 1.14. Firm Diversification and the Value of Large Customers–Number of Segments

This table shows the relation between firm diversification and the value of large customers. I use a sample of 12677 firms from 1976 to 2013 with 110084 firm-year observations. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Number of Segments as a measure of firm diversification is the total number of segments in a firm. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the top large customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. I cluster the standard errors by firm and year. P-value is noted in the parentheses.

	Excess Value		
Intercept	-7.583	-7.598	-7.596
	(0.01)	(0.01)	(0.01)
Number of Segments	-0.050	-0.049	-0.050
	(0.01)	(0.01)	(0.01)
Large Customers	0.077		
	(0.01)		
Number of Segments * Large Customers	-0.051		
	(0.01)		
Top Large Customer		0.439	
		(0.01)	
Number of Segments * Top Large Customer		-0.253	
		(0.01)	
All Large Customers			0.337
			(0.01)
Number of Segments * All Large Customers			-0.202
			(0.01)
Size	1.157	1.158	1.158
	(0.01)	(0.01)	(0.01)
EBIT/SALES	0.060	0.061	0.061
	(0.01)	(0.01)	(0.01)
CAPX/SALES	0.283	0.282	0.282
	(0.01)	(0.01)	(0.01)
Size t-1	-0.272	-0.272	-0.272
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-1	-0.036	-0.037	-0.037
	(0.16)	(0.16)	(0.16)
CAPX/SALES t-1	0.115	0.114	0.115
	(0.01)	(0.01)	(0.01)
Size t-2	-0.197	-0.197	-0.197
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-2	-0.047	-0.046	-0.046
	(0.02)	(0.02)	(0.02)
CAPX/SALES t-2	0.421	0.420	0.420
	(0.01)	(0.01)	(0.01)
Leverage	-0.162	-0.161	-0.161
	(0.01)	(0.01)	(0.01)
Size Squared	-0.015	-0.015	-0.015
	(0.01)	(0.01)	(0.01)
Number of Observations	110084	110084	110084
Adjusted R Squared	0.20	0.20	0.20

Table 1.15. Firm Diversification and the Value of Large Customers – Firm Concentration

This table shows the relation between firm diversification and the value of large customers. I use a sample of 12677 firms from 1976 to 2013 with 110084 firm-year observations. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Concentration is an asset-based Herfindahl index which is calculated by the sum of the squares of each segment's assets as a percentage of the firm's total assets. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the top large customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. I cluster the standard errors by firm and year. P-value is noted in the parentheses.

	Excess Value		
Intercept	-7.461	-7.473	-7.470
	(0.01)	(0.01)	(0.01)
Firm Concentration	0.261	0.258	0.258
	(0.01)	(0.01)	(0.01)
Large Customers	-0.191		
	(0.01)		
Firm Concentration * Large Customers	0.213		
	(0.01)		
Top Large Customer		-0.888	
		(0.01)	
Firm Concentration * Top Large Customer		1.063	
		(0.01)	
All Large Customers			-0.765
			(0.01)
Firm Concentration * All Large Customers			0.889
			(0.01)
Size	1.113	1.114	1.113
	(0.01)	(0.01)	(0.01)
EBIT/SALES	0.060	0.062	0.061
	(0.01)	(0.01)	(0.01)
CAPX/SALES	0.279	0.278	0.278
	(0.01)	(0.01)	(0.01)
Size t-1	-0.272	-0.272	-0.272
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-1	-0.033	-0.034	-0.034
	(0.20)	(0.19)	(0.20)
CAPX/SALES t-1	0.115	0.115	0.115
	(0.01)	(0.01)	(0.01)
Size t-2	-0.196	-0.196	-0.196
	(0.01)	(0.01)	(0.01)
EBIT/SALES t-2	-0.045	-0.044	-0.044
	(0.02)	(0.03)	(0.03)
CAPX/SALES t-2	0.418	0.417	0.417
	(0.01)	(0.01)	(0.01)
Leverage	-0.152	-0.151	-0.152
	(0.01)	(0.01)	(0.01)
Size Squared	-0.014	-0.014	-0.014
	(0.01)	(0.01)	(0.01)
Number of Observations	110084	110084	110084
Adjusted R Squared	0.20	0.20	0.20

Table 1.16. Firm Diversification and the Value of Large Customers –Alternative Measures of Large Customers

This table shows the relation between firm diversification and the value of large customers. I use a sample of 12677 firms from 1976 to 2013 with 110084 firm-year observations. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Relative Size 1 is the ratio of the average market value of customer to the market value of the supplier firm. Relative Size 2 is calculated by the average market value of firms in the industries that a customer belongs to divided by the market value of the supplier firm. I use the concentration ratio of customers as industry-level proxies for the presence of large customers. Concentration 1 is defined as the average of a firm's Herfindahl-Hirschman index value in the industries that a customer belongs to. Concentration 2 is the average of the ratio of the market value of a customer firm to the average market value of firms in the industries that a customer belongs to. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. I cluster the standard errors by firm and year. P-value is noted in the parentheses.

	Excess Value			
Intercept	-7.663	-7.585	-7.686	-7.687
	(0.01)	(0.01)	(0.01)	(0.01)
Firm Diversification	-0.104	-0.108	-0.108	-0.108
	(0.01)	(0.01)	(0.01)	(0.01)
Relative Size 1	-0.005			
	(0.01)			
Firm Diversification * Relative Size 1	-0.012			
	(0.01)			
Relative Size 2		-0.018		
		(0.01)		
Firm Diversification * Relative Size 2		-0.008		
		(0.01)		
Concentration 1			0.001	
			(0.96)	
Firm Diversification * Concentration 1			-0.070	
			(0.04)	
Concentration 2				0.001
				(0.22)
Firm Diversification * Concentration 2				-0.002
				(0.01)
Size	1.165	1.158	1.167	1.167
	(0.01)	(0.01)	(0.01)	(0.01)
EBIT/SALES	0.057	0.054	0.060	0.060
	(0.01)	(0.02)	(0.01)	(0.01)
CAPX/SALES	0.287	0.288	0.286	0.287
	(0.01)	(0.01)	(0.01)	(0.01)
Size t-1	-0.272	-0.271	-0.272	-0.272
	(0.01)	(0.01)	(0.01)	(0.01)
EBIT/SALES t-1	-0.032	-0.031	-0.033	-0.033
	(0.22)	(0.24)	(0.21)	(0.21)
CAPX/SALES t-1	0.121	0.121	0.120	0.120
	(0.01)	(0.01)	(0.01)	(0.01)
Size t-2	-0.196	-0.196	-0.196	-0.196
	(0.01)	(0.01)	(0.01)	(0.01)
EBIT/SALES t-2	-0.045	-0.046	-0.045	-0.045
	(0.02)	(0.02)	(0.02)	(0.02)
CAPX/SALES t-2	0.427	0.427	0.428	0.427
	(0.01)	(0.01)	(0.01)	(0.01)
Leverage	-0.155	-0.156	-0.155	-0.154
	(0.01)	(0.01)	(0.01)	(0.01)
Size Squared	-0.016	-0.016	-0.016	-0.016
	(0.01)	(0.01)	(0.01)	(0.01)
Number of Observations	110084	110084	110084	110084
Adjusted R Squared	0.19	0.19	0.19	0.19

Table 1.17. Bargaining Position and Trade Credit

This table shows the trade credit based on supplier-customer pairs (i.e., sales of a supplier to specific customers). I use a sample of 3309 firms from 1976 to 2013 with 18780 firm-year observations. Panel A shows the relation between large customers and suppliers' accounts receivable. Supplier's Accounts Receivable is calculated as log (1+(supplier's accounts receivable)*(fraction of supplier's overall sales to the customer)). Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Relative Size 1 is the ratio of the average market value of customer to the market value of the supplier firm. Relative Size 2 is calculated by the average market value of firms in the industries that a customer belongs to divided by the market value of the supplier firm. Size is the logarithm of sales. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Leverage is the ratio of long-term debts to assets. Corporate Cash Holdings is the ratio of cash and marketable securities to assets. Tangibility is the ratio of plant, property and equipment to assets. Dividends is the ratio of dividends to assets. Panel B shows the relation between large customers and customer's accounts payable. Customer's Accounts Payable is calculated as (1+ (customer firm's accounts payable) * (supplier's sales to the customer/customer's overall costs of goods sold)). P-value is noted in the parentheses.

Panel A: Supplier's Accounts Receivable

	Supplier's Accounts Receivable	
Intercept	-9.775	-9.603
	(0.01)	(0.01)
Firm Diversification	-0.443	-0.390
	(0.01)	(0.01)
Relative Size 1	0.034	
	(0.01)	
Firm Diversification * Relative Size 1	0.051	
	(0.01)	
Relative Size 2		0.022
		(0.01)
Firm Diversification * Relative Size 2		0.054
		(0.01)
Size	0.633	0.629
	(0.01)	(0.01)
M / B	0.023	0.021
	(0.01)	(0.01)
Leverage	-0.757	-0.780
	(0.01)	(0.01)
Corporate Cash Holdings	-1.411	-1.404
	(0.01)	(0.01)
Tangibility	-0.575	-0.591
	(0.01)	(0.01)
Dividends	-1.845	-1.962
	(0.01)	(0.01)
Number of Observations	18780	18780
Adjusted R-Squared	0.62	0.62

Table 1.17. (Continued)

Panel B: Customer's Accounts Payable

	Customer's Accounts Payable	
Intercept	-10.220	-10.523
	(0.01)	(0.01)
Firm Diversification	-0.403	-0.306
	(0.01)	(0.01)
Relative Size 1	0.062	
	(0.01)	
Firm Diversification * Relative Size 1	0.051	
	(0.01)	
Relative Size 2		0.080
		(0.01)
Firm Diversification * Relative Size 2		0.036
		(0.01)
Size	0.636	0.653
	(0.01)	(0.01)
M / B	0.034	0.045
	(0.01)	(0.01)
Leverage	-0.617	-0.650
	(0.01)	(0.01)
Corporate Cash Holdings	-0.879	-0.859
	(0.01)	(0.01)
Tangibility	-0.409	-0.433
	(0.01)	(0.01)
Dividends	-2.013	-2.147
	(0.01)	(0.01)
Number of Observations	18780	18780
Adjusted R-Squared	0.49	0.49

Table 1.18. The Setting of Tariff Cut: First-Stage Regressions (Different Tariff Cut-off Point)

This table shows the relation between a tariff cut and the change in large customers. I use a sample of 2913 firms in the manufacturing industries from 1976 to 2005 with 22301 firm-year observations. ΔX indicates the change in variable X from year t-1 to year t+1. Top Large Customer is the ratio of the purchases made by the top large customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Tariff Cut is a dummy variable which equals one if the percentage reduction of tariff in the industry of the segment that a large customer belongs to is 1.5, 2.5 or 3 times higher than its industry median percentage change, and equals zero otherwise. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. I cluster the standard errors by firm and year. P-value is noted in the parentheses.

	Tariff Cut 1.5		Tariff Cut 2.5		Tariff Cut 3.0	
	Δ Top Large Customer	Δ All Large Customers	Δ Top Large Customer	Δ All Large Customers	Δ Top Large Customer	Δ All Large Customers
Intercept	0.027	0.070	0.028	0.071	0.028	0.071
	(0.37)	(0.14)	(0.35)	(0.13)	(0.35)	(0.13)
Tariff Cut	-0.002	-0.004	-0.003	-0.004	-0.003	-0.004
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Size	-0.009	-0.014	-0.009	-0.014	-0.009	-0.014
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
EBIT/SALES	0.008	-0.002	0.009	-0.002	0.009	-0.002
	(0.24)	(0.86)	(0.22)	(0.89)	(0.22)	(0.88)
CAPX/SALES	0.013	0.019	0.014	0.020	0.014	0.020
	(0.21)	(0.33)	(0.20)	(0.31)	(0.20)	(0.31)
Size t-1	0.006	0.006	0.006	0.006	0.006	0.006
	(0.05)	(0.27)	(0.05)	(0.28)	(0.05)	(0.28)
EBIT/SALES t-1	0.003	0.009	0.002	0.009	0.002	0.009
	(0.73)	(0.55)	(0.74)	(0.56)	(0.74)	(0.56)
CAPX/SALES t-1	-0.013	-0.020	-0.013	-0.020	-0.013	-0.020
	(0.23)	(0.31)	(0.23)	(0.32)	(0.23)	(0.32)
Size t-2	0.001	0.001	0.001	0.001	0.001	0.001
	(0.91)	(0.77)	(0.92)	(0.78)	(0.92)	(0.78)
EBIT/SALES t-2	-0.006	-0.010	-0.006	-0.010	-0.006	-0.010
	(0.26)	(0.35)	(0.26)	(0.35)	(0.25)	(0.35)
CAPX/SALES t-2	-0.009	-0.015	-0.009	-0.015	-0.009	-0.015
	(0.37)	(0.40)	(0.37)	(0.41)	(0.37)	(0.41)
Leverage	0.001	0.001	0.001	0.002	0.001	0.001
	(0.55)	(0.70)	(0.54)	(0.68)	(0.54)	(0.69)
Size Squared	0.001	0.001	0.001	0.001	0.001	0.001
	(0.27)	(0.09)	(0.25)	(0.08)	(0.24)	(0.08)
Number of Observations	22301	22301	22301	22301	22301	22301
Adjusted R Squared	0.01	0.01	0.01	0.01	0.01	0.01

Table 1.19. The Setting of Tariff Cut: Second-Stage Regressions (Different Tariff Cut-off Point)

This table shows how a tariff cut affects the relation between firm diversification and the value of large customers. I use a sample of 2913 firms from 1976 to 2005 with 22301 firm-year observations. ΔX indicates the change in variable X from year t-1 to year t+1. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Tariff Cut is a dummy variable which equals one if the percentage reduction of tariff in the industry of the segment that a large customer belongs to is 1.5, 2.5 or 3 times higher than its industry median percentage change, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the top large customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of Capital Expenditure to total sales. Leverage is the ratio of long-term debts to assets. This table reports the regressions using the instrumental variables approach. I follow Campa and Kedia (2002) and use the estimated probability of diversification from the probit model reported in Table 1.4 as a generated instrument for the diversification status (see text for details). I also use the Change in Top Large Customer and Change in All Large Customers from the first stage reported in Table 1.9 as the generated instruments for the presence of large customers (see text for details). I cluster the standard errors by firm and year. P-value is noted in the parentheses.

	Δ Excess Value					
	Tariff Cut 1.5		Tariff Cut 2.5		Tariff Cut 3.0	
Intercept	-0.168	-0.340	-0.167	-0.314	-0.188	-0.380
	(0.45)	(0.15)	(0.44)	(0.17)	(0.39)	(0.10)
Firm Diversification	0.049	0.044	0.051	0.043	0.049	0.040
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Δ Top Large Customer	7.971		7.027		9.151	
	(0.01)		(0.02)		(0.01)	
Firm Diversification * Δ Top Large Customer	-20.302		-19.876		-23.857	
	(0.01)		(0.01)		(0.01)	
Δ All Large Customers		6.532		6.129		7.924
		(0.01)		(0.01)		(0.01)
Firm Diversification * Δ All Large Customers		-11.369		-11.688		-13.828
		(0.02)		(0.01)		(0.01)
Size	0.344	0.381	0.339	0.375	0.349	0.389
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
EBIT/SALES	-0.092	-0.066	-0.086	-0.067	-0.097	-0.063
	(0.06)	(0.18)	(0.08)	(0.17)	(0.05)	(0.20)
CAPX/SALES	0.262	0.278	0.273	0.287	0.254	0.267
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Size t-1	-0.653	-0.675	-0.649	-0.673	-0.657	-0.678
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
EBIT/SALES t-1	0.022	-0.009	0.024	-0.005	0.021	-0.015
	(0.64)	(0.85)	(0.61)	(0.91)	(0.66)	(0.76)
CAPX/SALES t-1	-0.072	-0.114	-0.082	-0.120	-0.061	-0.107
	(0.30)	(0.09)	(0.23)	(0.08)	(0.38)	(0.11)
Size t-2	0.323	0.327	0.324	0.327	0.323	0.326
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
EBIT/SALES t-2	0.084	0.102	0.079	0.097	0.087	0.108
	(0.02)	(0.01)	(0.03)	(0.01)	(0.02)	(0.01)
CAPX/SALES t-2	-0.212	-0.185	-0.218	-0.194	-0.206	-0.172
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Leverage	0.012	0.005	0.013	0.006	0.012	0.004
	(0.40)	(0.75)	(0.36)	(0.71)	(0.42)	(0.80)
Size Squared	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.48)	(0.14)	(0.48)	(0.16)	(0.41)	(0.09)
Number of Observations	22301	22301	22301	22301	22301	22301
Adjusted R Squared	0.11	0.11	0.11	0.11	0.11	0.11

Table 2.1. Univariate Statistics

This table shows univariate statistics. I use a sample of 12677 firms from 1976 to 2015 with 110084 firm-year observations. Panel A shows the univariate statistics. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Top Supplier is the ratio of the purchases from the top supplier to the costs of goods sold of the firm. All Suppliers is the ratio of the purchases from by all suppliers to the costs of goods sold of the firm. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. Panel B shows the univariate statistics on Excess Value for diversified firms and single-segment firms.

Panel A: Univariate Statistics

	Mean	Median	25th Pctl	75th Pctl	Std Dev
Excess Value	-0.0232	-0.0356	-0.4289	0.3592	0.6615
Firm Diversification	0.3132	0.0000	0.0000	1.0000	0.4638
Top Supplier (subsample)	0.0519	0.0058	0.0008	0.0277	0.2077
All Suppliers (subsample)	0.0601	0.0070	0.0009	0.0347	0.2225
Size	19.3155	19.0869	17.9221	20.4982	1.8249
EBIT/SALES	0.0581	0.0691	0.0218	0.1255	0.1723
CAPX/SALES	0.0838	0.0403	0.0196	0.0840	0.1328
Leverage	0.1916	0.1531	0.0177	0.3013	0.1883

Panel B: Univariate Statistics on Excess Value (Sales)

	Excess Value				
	Mean	Median	25th Pctl	75th Pctl	Std Dev
Diversified firms	-0.0923	-0.1007	-0.4376	0.2501	0.5808
Single-segment firms	0.0083	0.0000	-0.4237	0.4160	0.6929

Table 2.2. Univariate Analysis of Excess Value for Diversified Firms

This table shows the univariate analysis of excess value for diversified firm. I use a sample of 4765 diversified firms from 1976 to 2013 with 34481 firm-year observations. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. I conduct the mean test and the median test for the difference, and report the p-value in the table.

Excess Value (Sales) Sub-sample: Diversified Firms				
	With Large Suppliers	Without Large Suppliers	Difference	P-value
Mean	0.0468	-0.0940	0.1408	0.03
Median	0.0270	-0.1017	0.0129	0.01

Table 2.3. Firm Diversification and the Value of Large Suppliers

This table shows the relation between firm diversification and the value of large suppliers. I use a sample of 12677 firms from 1976 to 2015 with 110084 firm-year observations. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Top Supplier is the ratio of the purchases from the top supplier to the costs of goods sold of the firm. All Suppliers is the ratio of the purchases from by all suppliers to the costs of goods sold of the firm. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. I cluster the standard errors by firm and year. The p-value is noted in the parentheses.

	Excess Value	
Intercept	-7.681	-7.674
	(0.01)	(0.01)
Firm Diversification	-0.110	-0.110
	(0.01)	(0.01)
Top Supplier	0.002	
	(0.01)	
Firm Diversification * Top Supplier	0.068	
	(0.04)	
All Suppliers		0.001
		(0.18)
Firm Diversification * All Suppliers		0.065
		(0.04)
Size	1.164	1.165
	(0.01)	(0.01)
EBIT/SALES	-0.044	-0.064
	(0.06)	(0.01)
CAPX/SALES	0.995	0.986
	(0.01)	(0.01)
Size t-1	-0.280	-0.282
	(0.01)	(0.01)
EBIT/SALES t-1	0.001	0.022
	(0.98)	(0.38)
CAPX/SALES t-1	-0.050	-0.050
	(0.10)	(0.10)
Size t-2	-0.187	-0.186
	(0.01)	(0.01)
EBIT/SALES t-2	-0.046	-0.041
	(0.02)	(0.03)
CAPX/SALES t-2	0.363	0.367
	(0.01)	(0.01)
Leverage	-0.166	-0.166
	(0.01)	(0.01)
Size Squared	-0.016	-0.016
	(0.01)	(0.01)
Number of Observations	110084	110084
Adjusted R Squared	0.20	0.20

Table 2.4. Trade Credit

This table shows the trade credit based on supplier-customer pairs (i.e., sales of a supplier to specific customers). I use a sample of 3309 firms from 1976 to 2013 with 18780 firm-year observations. Panel A shows the relation between large customers and suppliers' accounts receivable. Supplier's Accounts Receivable is calculated as log (1+(supplier's accounts receivable)*(fraction of supplier's overall sales to the customer)). Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Top Large Supplier is the ratio of the purchase made by the top large customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large suppliers to the total sales of the firm. Size is the logarithm of sales. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Leverage is the ratio of long-term debts to assets. Corporate Cash Holdings is the ratio of cash and marketable securities to assets. Tangibility is the ratio of plant, property and equipment to assets. Dividends is the ratio of dividends to assets. Panel B shows the relation between large customers and customer's accounts payable. Customer's Accounts Payable is calculated as (1+ (customer firm's accounts payable) * (supplier's sales to the customer/customer's overall costs of goods sold)). The p-value is noted in the parentheses.

Panel A: Supplier's Accounts Receivable

	Supplier's Accounts Receivable	
Intercept	-8.911	-8.911
	(0.01)	(0.01)
Firm Diversification	-0.196	-0.197
	(0.01)	(0.01)
Top Large Supplier	0.150	
	(0.03)	
Firm Diversification * Top Large Supplier	-0.784	
	(0.01)	
All Large Suppliers		0.163
		(0.01)
Firm Diversification * All Large Suppliers		-0.634
		(0.01)
Size	0.585	0.585
	(0.01)	(0.01)
M / B	0.010	0.010
	(0.14)	(0.15)
Leverage	-0.641	-0.642
	(0.01)	(0.01)
Corporate Cash Holdings	-0.866	-0.866
	(0.01)	(0.01)
Tangibility	-0.454	-0.454
	(0.01)	(0.01)
Dividends	-2.557	-2.560
	(0.01)	(0.01)
Number of Observations	18782	18782
Adjusted R-Squared	0.48	0.48

Table 2.4. (Continued)

Panel B: Customer's Accounts Payable

	Customer's Accounts Payable	
Intercept	-8.956	-8.956
	(0.01)	(0.01)
Firm Diversification	-0.233	-0.234
	(0.01)	(0.01)
Top Large Supplier	0.128	
	(0.02)	
Firm Diversification * Top Large Supplier	-0.541	
	(0.01)	
All Large Suppliers		0.133
		(0.01)
Firm Diversification * All Large Suppliers		-0.432
		(0.02)
Size	0.600	0.600
	(0.01)	(0.01)
M / B	0.009	0.009
	(0.10)	(0.10)
Leverage	-0.771	-0.771
	(0.01)	(0.01)
Corporate Cash Holdings	-1.403	-1.403
	(0.01)	(0.01)
Tangibility	-0.606	-0.606
	(0.01)	(0.01)
Dividends	-2.216	-2.217
	(0.01)	(0.01)
Number of Observations	18782	18782
Adjusted R-Squared	0.48	0.48

Table 2.5. Relationship-Specific Investments

This table shows how supplier industries R&D affects the relation between firm diversification and the value of large suppliers. I use a sample of 12677 firms from 1976 to 2015 with 110084 firm-year observations. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Supplier Industries R&D is defined as the weighted mean of each supplier's industry R&D, where the weighting is the ratio of the purchase made from each supplier to the costs of goods sold of the firm. Top Supplier is the ratio of the purchases from the top supplier to the costs of goods sold of the firm. All Suppliers is the ratio of the purchases from by all suppliers to the costs of goods sold of the firm. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. I cluster the standard errors by firm and year. The p-value is noted in the parentheses.

	Excess Value	
Intercept	-7.993	-7.993
	(0.01)	(0.01)
Firm Diversification	-0.110	-0.110
	(0.01)	(0.01)
Top Supplier	0.007	
	(0.62)	
Firm Diversification * Top Supplier	-0.002	
	(0.94)	
Top Supplier *Supplier Industries R&D	-0.003	
	(0.73)	
Firm Diversification * Top Supplier * Supplier Industries R&D	1.901	
	(0.01)	
All Suppliers		-0.004
		(0.12)
Firm Diversification * All Suppliers		0.008
		(0.68)
All Supplier * Supplier Industries R&D		0.004
		(0.02)
Firm Diversification * All Suppliers * Supplier Industries R&D		1.860
		(0.01)
Size	1.230	1.230
	(0.01)	(0.01)
EBIT/ SALES	0.014	0.014
	(0.57)	(0.57)
CAPX/ SALES	0.301	0.301
	(0.01)	(0.01)
Size t-1	-0.300	-0.300
	(0.01)	(0.01)
EBIT/ SALES t-1	-0.034	-0.034
	(0.22)	(0.22)
CAPX/ SALES t-1	0.116	0.116
	(0.01)	(0.01)
Size t-2	-0.204	-0.204
	(0.01)	(0.01)
EBIT/ SALES t-2	-0.059	-0.059
	(0.01)	(0.01)
CAPX/ SALES t-2	0.455	0.455
	(0.01)	(0.01)
Leverage	-0.157	-0.157
	(0.01)	(0.01)
Size Squared	-0.016	-0.016
	(0.01)	(0.01)
Number of Observations	110084	110084
Adjusted R-Squared	0.20	0.20

Table 2.6. Unrelatedness

This table shows how a firm's unrelatedness of segments affects the relation between firm diversification and the value of large suppliers. I use a sample of 12677 firms from 1976 to 2015 with 110084 firm-year observations. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Unrelatedness is a dummy variable which equals one if the segments of a diversified firm do not operate in the same industries, and equals zero otherwise. Top Supplier is the ratio of the purchases from the top supplier to the costs of goods sold of the firm. All Suppliers is the ratio of the purchases from by all suppliers to the costs of goods sold of the firm. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. I cluster the standard errors by firm and year. The p-value is noted in the parentheses.

	Excess Value	
Intercept	-8.000	-7.998
	(0.01)	(0.01)
Firm Diversification	-0.109	-0.110
	(0.01)	(0.01)
Top Supplier	0.346	
	(0.01)	
Firm Diversification * Top Supplier	-0.699	
	(0.01)	
Firm Diversification * Top Supplier * Unrelatedness	0.649	
	(0.01)	
All Suppliers		0.001
		(0.21)
Firm Diversification * All Supplier		-0.070
		(0.01)
Firm Diversification * All Supplier * Unrelatedness		0.115
		(0.01)
Size	1.231	1.231
	(0.01)	(0.01)
EBIT/ SALES	0.014	0.014
	(0.56)	(0.57)
CAPX/ SALES	0.300	0.301
	(0.01)	(0.01)
Size t-1	-0.300	-0.300
	(0.01)	(0.01)
EBIT/ SALES t-1	-0.034	-0.034
	(0.22)	(0.22)
CAPX/ SALES t-1	0.116	0.116
	(0.01)	(0.01)
Size t-2	-0.204	-0.204
	(0.01)	(0.01)
EBIT/ SALES t-2	-0.059	-0.059
	(0.01)	(0.01)
CAPX/ SALES t-2	0.456	0.455
	(0.01)	(0.01)
Leverage	-0.157	-0.157
	(0.01)	(0.01)
Size Squared	-0.016	-0.016
	(0.01)	(0.01)
Number of Observations	110084	110084
Adjusted R-Squared	0.20	0.20

Table 2.7. The Setting of Tariff Cut: First-Stage regressions

This table shows the relation between tariff cut and the change in suppliers. I use a sample of 2473 firms in the manufacturing industries from 1976 to 2005 with 23599 firm-year observations. ΔX indicates the change in variable X from year t-1 to year t+1. Top Supplier is the ratio of the purchases from the top supplier to the costs of goods sold of the firm. All Suppliers is the ratio of the purchases from by all suppliers to the costs of goods sold of the firm. Tariff Cut is a dummy variable which equals one if the percentage reduction of tariff in the industry of the segment that a large customer belongs to is 1.5 times higher than its industry median percentage change, and equals zero otherwise. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. The variable S&P is a dummy variable that equals one when the firm is part of the S&P index and equals 0 otherwise. PNDIV is the fraction of all firms in the industry that are diversified firms, PSDIV is the fraction of industry sales accounted for by diversified firms. GDP Growth is the growth rate in real GDP. Contraction is the number of months in a year when the economy was in recession. A_TA, A_EBIT, and A_CAPX are the average values of the variables Size, EBIT/SALES, and CAPX/SALES in the previous three years. MAJOREX is a dummy variable that equals one if the firm is listed on NASDAQ, NYSE, or AMEX, and equals zero otherwise. FOREIGN is a dummy variable that equals one if the firm is incorporated outside the United States and equals zero otherwise. Year Dummy Variables are the dummy variables for years in the sample. Industry Dummy Variables are the dummy variables for industries in the sample. I cluster the standard errors by firm and year. The p-value is noted in the parentheses.

Table 2.7. (Continued)

	Δ Top Supplier	Δ All Suppliers		Firm Diversification
Intercept	-1.018	-0.989	Intercept	-2.923
	(0.03)	(0.04)		(0.01)
Tariff Cut	-0.046	-0.036	Size	-0.108
	(0.01)	(0.01)		(0.02)
Size	0.021	0.023	EBIT/SALES	-0.135
	(0.66)	(0.66)		(0.31)
EBIT/ SALES	0.179	0.193	CAPX/SALES	-1.077
	(0.01)	(0.01)		(0.01)
CAPX/ SALES	0.026	0.005	Size t-1	-0.396
	(0.82)	(0.97)		(0.01)
Size t-1	0.099	0.102	EBIT/SALES t-1	0.434
	(0.01)	(0.01)		(0.03)
EBIT/ SALES t-1	-0.104	-0.091	CAPX/SALES t-1	-0.479
	(0.19)	(0.27)		(0.17)
CAPX/ SALES t-1	0.051	0.081	Size t-2	-0.494
	(0.67)	(0.53)		(0.01)
Size t-2	-0.025	-0.034	EBIT/SALES t-2	0.520
	(0.22)	(0.11)		(0.03)
EBIT/ SALES t-2	0.003	-0.027	CAPX/SALES t-2	-0.573
	(0.95)	(0.65)		(0.14)
CAPX/ SALES t-2	0.039	0.018	S&P	0.171
	(0.67)	(0.85)		(0.01)
Leverage	0.094	0.085	PNDIV	1.241
	(0.01)	(0.02)		(0.01)
Size Squared	-0.002	-0.002	PSDIV	1.434
	(0.05)	(0.08)		(0.01)
Year Dummy	YES	YES	GDP Growth	0.020
Industry Dummy	YES	YES		(0.01)
			GDP Growth t-1	0.014
				(0.01)
			Contraction	0.028
				(0.01)
			Contraction t-1	0.026
				(0.01)
			A_AT	1.062
				(0.01)
			A_EBIT	-0.166
				(0.60)
			A_CAPX	-1.491
				(0.01)
			MAJOREX	-0.060
				(0.02)
			Foreign	0.075
				(0.07)
Number of Observations	23599	23599	Number of Observations	23599
Adjusted R Squared	0.01	0.01	Pseudo R Squared	0.16

Table 2.8. The Setting of Tariff Cut: Second-Stage Regressions

This table shows how tariff cut affects the relation between firm diversification and the value of large suppliers. I use a sample of 2473 firms from 1976 to 2005 with 23599 firm-year observations. ΔX indicates the change in variable X from year t-1 to year t+1. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Tariff Cut is a dummy variable which equals one if the percentage reduction of tariff in the industry of the segment that a large customer belongs to is 1.5 times higher than its industry median percentage change, and equals zero otherwise. Top Supplier is the ratio of the purchases from the top supplier to the costs of goods sold of the firm. All Suppliers is the ratio of the purchases from by all suppliers to the costs of goods sold of the firm. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. This table reports the regressions using instrumental variables approach. I follow Campa and Kedia (2002) and use the estimated probability of diversification from the probit model reported in Table 4 as a generated instrument for the diversification status (see text for details). I also use the Change in Top Large Supplier and Change in All Large Suppliers from the first stage reported in Table 9 as the generated instruments for the presence of large suppliers (see text for details). I cluster the standard errors by firm and year. The p-value is noted in the parentheses.

	Δ Excess Value	
Intercept	-0.852	-0.942
	(0.07)	(0.04)
Firm Diversification	-0.011	-0.029
	(0.62)	(0.20)
Δ Top Large Supplier	-6.190	
	(0.01)	
Firm Diversification * Δ Top Large Supplier	9.966	
	(0.03)	
Δ All Large Suppliers		-6.933
		(0.01)
Firm Diversification * Δ All Large Suppliers		11.129
		(0.01)
Size	0.454	0.461
	(0.01)	(0.01)
EBIT/SALES	-0.139	-0.124
	(0.04)	(0.07)
CAPX/SALES	0.473	0.468
	(0.01)	(0.01)
Size t-1	-0.524	-0.521
	(0.01)	(0.01)
EBIT/SALES t-1	0.097	0.103
	(0.20)	(0.18)
CAPX/SALES t-1	-0.044	-0.031
	(0.72)	(0.79)
Size t-2	0.144	0.143
	(0.01)	(0.01)
EBIT/SALES t-2	-0.121	-0.132
	(0.02)	(0.01)
CAPX/SALES t-2	0.141	0.127
	(0.11)	(0.14)
Leverage	-0.032	-0.032
	(0.17)	(0.17)
Size Squared	-0.002	-0.002
	(0.16)	(0.12)
Number of Observations	23599	23599
Adjusted R Squared	0.07	0.07

Table 2.9. Univariate Statistics for the Sample of M&As

This table shows the univariate statistics for the sample of M&A. I use a sample of 7282 M&As from 1979 to 2013. CAR (-5, 5) is the cumulative abnormal return over days (-5, 5) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). ROA is the ratio of EBIT to assets. ∆ROA is the change in ROA from year t-1 to t+1. Net ∆ROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are the non-event firms in the same industry which have the closest size and M/B ratio (see text for details). Diversifying M&As is a dummy variable that equals one if both conditions are met: (1) the acquirer's main two-digit SIC code is different from the target's main two-digit SIC code, and (2) the acquirer's Herfindahl index calculated based on segment sales in year t+1 is smaller than the acquirer's Herfindahl index calculated based on segment sales in year t-1, and equals zero otherwise. Presence of Large Suppliers is a dummy variable that equals one if there exists at least one large supplier in the combined firm after M&As, and equals zero otherwise. Unfriendly is a dummy variable that equals one if an M&A takes place in an unfriendly way, and equals zero otherwise. Private Target is a dummy variable if the target is a private firm, and equals zero otherwise. Cash Payment is a dummy variable that equals one if the method of payment is cash for a deal, and equals zero otherwise. Deal Value is the ratio of deal value to the market capitalization of the acquirer. Size is the logarithm of total sales. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to sales. Dividends is the ratio of dividends to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years.

	Mean	Median	25th Pctl	75th Pctl	Std Dev
CAR (-5, 5)	0.0063	0.0038	-0.0508	0.0613	0.1060
Net ∆ROA	-0.0227	-0.0091	-0.0730	0.0490	0.1471
Diversifying M&As	0.1690	0.0000	0.0000	0.0000	0.3748
Presence of Large Suppliers	0.0271	0.0000	0.0000	0.0000	0.1622
Unfriendly	0.0147	0.0000	0.0000	0.0000	0.1203
Private Target	0.7172	1.0000	0.0000	1.0000	0.4504
Cash Payment	0.2347	0.0000	0.0000	0.0000	0.4238
Deal Value	4.2606	0.0351	0.0000	0.1574	344.0805
Size	19.6924	19.5809	18.3133	20.9188	1.8987
M / B	2.5720	1.7744	1.2643	2.8743	2.2396
Capital Expenditure	0.0620	0.0454	0.0238	0.0788	0.0610
R&D	0.0670	0.0082	0.0000	0.0883	0.1303
Dividends	0.0100	0.0000	0.0000	0.0137	0.0169
Leverage	0.1601	0.1192	0.0067	0.2635	0.1658
Cash Flow	0.0334	0.0566	0.0227	0.0945	0.1672
Tangibility	0.4302	0.3441	0.1701	0.6003	0.3270
Sales Growth	0.3254	0.1760	0.0506	0.4357	0.4723
Cash Flow Volatility	0.0812	0.0331	0.0161	0.0801	0.1356

Table 2.10. Large Suppliers and the Announcement Returns of M&As

This table shows the relation between announcement returns and the presence of large suppliers. I use a sample of 7282 M&As from 1979 to 2013. CAR (-5, 5) is the cumulative abnormal return over days (-5, 5) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Diversifying M&As is a dummy variable that equals one if both conditions are met: (1) the acquirer's main two-digit SIC code is different from the target's main two-digit SIC code, and (2) the acquirer's Herfindahl index calculated based on segment sales in year t+1 is smaller than the acquirer's Herfindahl index calculated based on segment sales in year t-1, and equals zero otherwise. Presence of Large Suppliers is a dummy variable that equals one if there exists at least one large supplier in the combined firm after an M&As, and equals zero otherwise. Unfriendly is a dummy variable that equals one if an M&A takes place in an unfriendly way, and equals zero otherwise. Private Target is a dummy variable if the target is a private firm, and equals zero otherwise. Cash Payment is a dummy variable that equals one if the method of payment is cash for a deal, and equals zero otherwise. Deal Value is the ratio of deal value to the market capitalization of acquirer. Size is the logarithm of total sales. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to sales. Dividends is the ratio of dividends to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Inverse Mills Ratio is calculated based the estimates of the probit model reported in Column 3 of Table 2.9. The p-value is noted in the parentheses.

	CAR (-5, 5)	
Intercept	0.058	0.066
	(0.01)	(0.01)
Diversifying M&As	-0.004	-0.004
	(0.24)	(0.20)
Presence of Large Suppliers	-0.003	-0.003
	(0.68)	(0.68)
Diversifying M&As *Presence of Large Suppliers	0.041	0.042
	(0.05)	(0.05)
Unfriendly	-0.001	-0.002
	(0.89)	(0.88)
Private Target	0.020	0.020
	(0.01)	(0.01)
Cash Payment	0.015	0.015
	(0.01)	(0.01)
Deal Value	-0.001	-0.001
	(0.25)	(0.25)
Size	-0.003	-0.003
	(0.01)	(0.01)
Capital Expenditure	-0.047	-0.044
	(0.06)	(0.07)
R&D	-1.052	-1.045
	(0.01)	(0.01)
Dividends	-0.249	-0.254
	(0.01)	(0.01)
Leverage	0.019	0.019
	(0.02)	(0.02)
Cash Flow	-0.019	-0.019
	(0.03)	(0.03)
Tangibility	0.013	0.013
	(0.01)	(0.01)
Sales Growth	-0.011	-0.010
	(0.01)	(0.01)
Cash Flow Volatility	-0.016	-0.015
	(0.15)	(0.17)
Inverse Mills Ratio		-0.015
		(0.49)
Number of Observations	7282	7282
Adjusted R Squared	0.02	0.02

Table 2.11. Large Suppliers and the Operating Performance for M&As

This table shows the relation between the operating performance and the presence of large suppliers. I use a sample of 6879 M&As from 1979 to 2013. ROA is the ratio of EBIT to assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are the non-event firms in the same industry which have the closest size and M/B ratio (see text for details). Diversifying M&As is a dummy variable that equals one if both conditions are met: (1) the acquirer's main two-digit SIC code is different from the target's main two-digit SIC code, and (2) the acquirer's Herfindahl index calculated based on segment sales in year t+1 is smaller than the acquirer's Herfindahl index calculated based on segment sales in year t-1, and equals zero otherwise. Presence of Large Suppliers is a dummy variable that equals one if there exists at least one large supplier in the combined firm after an M&As, and equals zero otherwise. Unfriendly is a dummy variable that equals one if an M&A takes place in an unfriendly way, and equals zero otherwise. Private Target is a dummy variable if the target is a private firm, and equals zero otherwise. Cash Payment is a dummy variable that equals one if the method of payment is cash for a deal, and equals zero otherwise. Deal Value is the ratio of deal value to the market capitalization of acquirer. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to sales. Dividends is the ratio of dividends to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Inverse Mills Ratio is calculated based the estimates of the probit model reported in Column 3 of Table 2.9. The p-value is noted in the parentheses.

	Net ΔROA	
Intercept	-0.050	-0.062
	(0.02)	(0.02)
Diversifying M&As	-0.004	-0.003
	(0.44)	(0.52)
Presence of Large Suppliers	-0.045	-0.045
	(0.01)	(0.01)
Diversifying M&As *Presence of Large Suppliers	0.054	0.053
	(0.08)	(0.08)
Unfriendly	-0.019	-0.019
	(0.18)	(0.19)
Private Target	0.004	0.004
	(0.32)	(0.31)
Cash Payment	-0.002	-0.002
	(0.70)	(0.67)
Deal Value	-0.001	-0.001
	(0.32)	(0.33)
Size	0.003	0.003
	(0.01)	(0.02)
M / B	-0.010	-0.010
	(0.01)	(0.01)
Capital Expenditure	-0.038	-0.042
	(0.25)	(0.21)
R&D	0.241	0.239
	(0.01)	(0.01)
Dividends	-0.071	-0.058
	(0.54)	(0.62)
Leverage	0.039	0.039
	(0.01)	(0.01)
Tangibility	0.001	0.002
	(0.89)	(0.80)
Sales Growth	-0.007	-0.008
	(0.01)	(0.01)
Cash Flow Volatility	-0.027	-0.028
	(0.06)	(0.05)
Inverse Mills Ratio		0.026
		(0.41)
Number of Observations	6879	6879
Adjusted R Squared	0.04	0.04

Table 2.12. Probit Regression

This table shows the probit regression. I use a sample of 12677 firms from 1976 to 2015 with 110084 firm-year observations. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. The variable S&P is a dummy variable that equals one when the firm is part of the S&P index and equals 0 otherwise. PNDIV is the fraction of all firms in the industry that are diversified firms, PSDIV is the fraction of industry sales accounted for by diversified firms. GDP Growth is the growth rate in real GDP. Contraction is the number of months in a year when the economy was in recession. A_TA, A_EBIT, and A_CAPX are the average values of the variables Size, EBIT/SALES, and CAPX/SALES in the previous three years. MAJOREX is a dummy variable that equals one if the firm is listed on Nasdaq, NYSE, or AMEX, and equals zero otherwise. FOREIGN is a dummy variable that equals one if the firm is incorporated outside the United States and equals zero otherwise. The p-value is noted in the parentheses.

	Firm Diversification
Intercept	-4.549
	(0.01)
Size	0.072
	(0.01)
EBIT/SALES	-0.123
	(0.01)
CAPX/SALES	-0.200
	(0.01)
Size t-1	-0.066
	(0.01)
EBIT/SALES t-1	-0.094
	(0.16)
CAPX/SALES t-1	0.067
	(0.44)
Size t-2	0.063
	(0.02)
EBIT/SALES t-2	0.124
	(0.07)
CAPX/SALES t-2	-0.130
	(0.17)
S&P	0.111
	(0.01)
PNDIV	2.939
	(0.01)
PSDIV	0.073
	(0.01)
GDP Growth	0.014
	(0.01)
GDP Growth t-1	0.017
	(0.01)
Contraction	0.008
	(0.01)
Contraction t-1	0.008
	(0.01)
A_AT	0.089
	(0.01)
A_EBIT	-0.152
	(0.12)
A_CAPX	-0.816
	(0.01)
MAJOREX	-0.002
	(0.87)
Foreign	-0.090
	(0.01)
Number of Observations	110084
Pseudo R Squared	0.24

Table 2.13. Robustness Checks: Heckman Two-Stage Estimation and Instrumental Variables Approach

This table shows the robustness checks using the Heckman two-stage estimation and instrumental variables approach. I use a sample of 12677 firms from 1976 to 2015 with 110084 firm-year observations. Panel A shows the second stage of the Heckman estimation. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Firm Diversification is a dummy variable which equals one if a firm has at least two segments with different SIC codes, and equals zero otherwise. Top Supplier is the ratio of the purchase made by the top supplier to the total sales of the firm. All Suppliers is the ratio of the purchases made by all suppliers to the total sales of the firm. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. Inverse Mills Ratio is calculated based on the estimates in the probit regression reported in Table 5 (see text for details). Panel B reports the regressions using the instrumental variables approach. I follow Campa and Kedia (2002) and use the estimated probability of diversification from the probit model reported in Table 4 as a generated instrument for the diversification status (see text for details). I cluster the standard errors by firm and year. The p-value is noted in the parentheses.

Panel A: Second Stage of Heckman Estimation

	Excess Value	
Intercept	-7.846	-7.838
	(0.01)	(0.01)
Firm Diversification	0.152	0.151
	(0.01)	(0.01)
Top Supplier	0.002	
	(0.01)	
Firm Diversification * Top Supplier	0.071	
	(0.03)	
All Suppliers		0.001
		(0.17)
Firm Diversification * All Suppliers		0.068
		(0.03)
Size	1.172	1.173
	(0.01)	(0.01)
EBIT/SALES	-0.048	-0.068
	(0.04)	(0.01)
CAPX/SALES	0.989	0.980
	(0.01)	(0.01)
Size t-1	-0.278	-0.281
	(0.01)	(0.01)
EBIT/SALES t-1	0.003	0.025
	(0.91)	(0.33)
CAPX/SALES t-1	-0.037	-0.037
	(0.23)	(0.23)
Size t-2	-0.192	-0.191
	(0.01)	(0.01)
EBIT/SALES t-2	-0.052	-0.047
	(0.01)	(0.02)
CAPX/SALES t-2	0.382	0.386
	(0.01)	(0.01)
Leverage	-0.171	-0.170
	(0.01)	(0.01)
Size Squared	-0.016	-0.016
	(0.01)	(0.01)
Inverse Mills Ratio	-0.170	-0.169
	(0.01)	(0.01)
Number of Observations	110084	110084
Adjusted R Squared	0.20	0.20

Table 2.13 (Continued)

Panel B: Instrumental Variables Approach

	Excess Value	
Intercept	-8.004	-8.005
	(0.01)	(0.01)
Firm Diversification	-0.147	-0.146
	(0.01)	(0.01)
Top Supplier	0.027	
	(0.03)	
Firm Diversification * Top Supplier	0.122	
	(0.02)	
All Suppliers		-0.009
		(0.01)
Firm Diversification * All Suppliers		0.043
		(0.01)
Size	1.184	1.184
	(0.01)	(0.01)
EBIT/SALES	0.049	0.049
	(0.03)	(0.03)
CAPX/SALES	0.299	0.299
	(0.01)	(0.01)
Size t-1	-0.272	-0.272
	(0.01)	(0.01)
EBIT/SALES t-1	-0.038	-0.038
	(0.15)	(0.15)
CAPX/SALES t-1	0.115	0.115
	(0.01)	(0.01)
Size t-2	-0.201	-0.201
	(0.01)	(0.01)
EBIT/SALES t-2	-0.079	-0.079
	(0.01)	(0.01)
CAPX/SALES t-2	0.407	0.407
	(0.01)	(0.01)
Leverage	-0.189	-0.188
	(0.01)	(0.01)
Size Squared	-0.016	-0.016
	(0.01)	(0.01)
Number of Observations	110084	110084
Adjusted R Squared	0.19	0.19

Table 2.14. Firm Diversification and the Value of Large Suppliers – Number of Segments

This table shows the relation between firm diversification and the value of large suppliers. I use a sample of 12677 firms from 1976 to 2015 with 110084 firm-year observations. Excess value is calculated based on the method in Berger and Ofek (1995) and is defined as the natural logarithm of the ratio of a firm's actual value to its imputed value, where the imputed value is the sum of the imputed values of its segments with each segment's imputed value equal to the segment's sales multiplied by its industry median ratio of capital to sales. Number of Segments as a measure of firm diversification is the total number of segments in a firm. Top Supplier is the ratio of the purchases from the top supplier to the costs of goods sold of the firm. All Suppliers is the ratio of the purchases from by all suppliers to the costs of goods sold of the firm. Size is the logarithm of total assets. EBIT/SALES is the ratio of EBIT to total sales. CAPX/SALES is the ratio of capital expenditure to total sales. Leverage is the ratio of long-term debts to assets. I cluster the standard errors by firm and year. The p-value is noted in the parentheses.

	Excess Value	
Intercept	-7.568	-7.580
	(0.01)	(0.01)
Number of Segments	-0.053	-0.053
	(0.01)	(0.01)
Top Supplier	0.001	
	(0.08)	
Number of Segments * Top Supplier	0.140	
	(0.01)	
All Suppliers		-0.001
		(0.98)
Number of Segments * All Suppliers		0.133
		(0.01)
Size	1.156	1.157
	(0.01)	(0.01)
EBIT/SALES	0.058	0.059
	(0.01)	(0.01)
CAPX/SALES	0.282	0.282
	(0.01)	(0.01)
Size t-1	-0.271	-0.271
	(0.01)	(0.01)
EBIT/SALES t-1	-0.036	-0.036
	(0.16)	(0.16)
CAPX/SALES t-1	0.115	0.115
	(0.01)	(0.01)
Size t-2	-0.197	-0.197
	(0.01)	(0.01)
EBIT/SALES t-2	-0.047	-0.047
	(0.02)	(0.02)
CAPX/SALES t-2	0.420	0.420
	(0.01)	(0.01)
Leverage	-0.163	-0.163
	(0.01)	(0.01)
Size Squared	-0.015	-0.015
	(0.01)	(0.01)
Number of Observations	110084	110084
Adjusted R Squared	0.20	0.20

Table 3.1. Univariate Statistics

This table shows univariate statistics. I use a sample of 8411 repurchase events from 1979 to 2013. CAR is the cumulative abnormal return over days (-1, +1) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Share Repurchases is defined as the amount of share repurchases to total assets. Dividends is the ratio of the amount of dividends to total assets. Percent Sought is the number of shares sought in the repurchases scaled by the total shares outstanding. Run-up (prior 6 months) is the abnormal stock price return from month -6 to month 0 relative to the announcement date (see text for details). Size is the logarithm of total assets. M/B is the the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Firm Age is the age of the firm. Turnover is the ratio of the monthly trading volume to the total shares outstanding. The p-value is noted in the parentheses.

Variables	Mean	Median	25th Pctl	75th Pctl	Std Dev
Share Repurchases CAR (-1, +1)	0.0369	0.0219	-0.0081	0.0671	0.0776
Large Customers	0.0844	0.0000	0.0000	0.0000	0.2780
Top Large Customer	0.1694	0.1382	0.1027	0.2088	0.1221
All Large Customers	0.2040	0.1500	0.1100	0.2651	0.1562
Share Repurchases	0.0143	0.0000	0.0000	0.0048	0.0527
Percent Sought	0.0964	0.0706	0.0458	0.1109	0.0906
size	19.4653	19.3110	18.0747	20.7869	1.9275
M / B	1.8220	1.4652	1.1162	2.0947	1.1937
Capital Expenditure	0.0592	0.0461	0.0238	0.0795	0.0491
R & D	0.0365	0.0000	0.0000	0.0373	0.0759
Leverage	0.1510	0.1046	0.0037	0.2424	0.1648
Cash Flow	0.1526	0.1481	0.0955	0.2034	0.0944
Tangibility	0.4742	0.3959	0.1911	0.6616	0.3848
Sale Growth	0.0776	0.0796	0.0796	0.0796	0.0445
Cash Flow Volatility	0.0557	0.0312	0.0162	0.0671	0.0631
Firm Age	17.7270	14.0000	8.0000	25.0000	12.5257
Turnover	0.1048	0.0587	0.0244	0.1306	0.1304

Table 3.2. Univariate Analysis on the Value of Share Repurchases

This table shows univariate analysis on the value of share repurchases. Panel A shows the univariate analysis on the announcement return of share repurchases. I use a sample of 8,411 events of share repurchases from 1979 to 2013. CAR is the cumulative abnormal return over days around the announcement date (-1, 1) and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Panel B shows univariate analysis on the operating performance of share repurchases. This is a sample of 8,278 events of share repurchases from 1979 to 2013. ROA is the ratio of EBIT to assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. I conduct the mean test and the median test for the difference, and report the p-value in the table.

Panel A: Univariate analysis on the announcement returns of share repurchases

Repurchase CAR (-1, +1)				
	With Large Customers	Without Large Customers	Difference	P-value
Mean	0.0287	0.0377	-0.0090	0.01
Median	0.0186	0.0223	-0.0037	0.05

Panel B: Univariate analysis on the operating performance of share repurchases

Net Change in ROA				
	With Large Customers	Without Large Customers	Difference	P-value
Mean	-0.0125	0.0007	-0.0132	0.04
Median	-0.0080	0.0000	-0.0080	0.09

Table 3.3. Large Customers and the Announcement Returns of Share Repurchases

This table shows the relation between announcement returns and the presence of large customers. I use a sample of 8411 repurchase events from 1979 to 2013. CAR is the cumulative abnormal return over days (-1, 1) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Run-up (prior 6 months) is the abnormal stock price return from month -6 to month 0 relative to the announcement date (see text for details). Percent Sought is the number of shares sought in the repurchases scaled by the total shares outstanding. Size is the logarithm of total assets. M/B is the the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. The The p-value is noted in the parentheses.

	CAR (-1, 1)		
Intercept	0.133	0.132	0.132
	(0.01)	(0.01)	(0.01)
Large Customers	-0.010		
	(0.01)		
Top Large Customer		-0.025	
		(0.04)	
All Large Customers			-0.022
			(0.03)
Run-up (prior 6 months)	-0.046	-0.046	-0.046
	(0.01)	(0.01)	(0.01)
Percent Sought	0.109	0.110	0.109
	(0.01)	(0.01)	(0.01)
Size	-0.005	-0.005	-0.005
	(0.01)	(0.01)	(0.01)
M / B	-0.003	-0.003	-0.003
	(0.01)	(0.01)	(0.01)
Capital Expenditure	0.018	0.017	0.018
	(0.32)	(0.34)	(0.34)
R&D	0.043	0.042	0.042
	(0.01)	(0.01)	(0.01)
Leverage	0.001	0.001	0.001
	(0.83)	(0.81)	(0.83)
Cash Flow	-0.048	-0.049	-0.049
	(0.01)	(0.01)	(0.01)
Tangibility	-0.002	-0.002	-0.002
	(0.41)	(0.41)	(0.40)
Sales Growth	0.039	0.044	0.044
	(0.03)	(0.02)	(0.02)
Cash Flow Volatility	0.102	0.102	0.102
	(0.01)	(0.01)	(0.01)
Number of Observations	8411	8411	8411
Adjusted R Squared	0.10	0.10	0.10

Table 3.4. Large Customers and the Operating Performance of Share Repurchases

This table shows the relation between the operating performance and the presence of large customers. I use a sample of 8,278 repurchase events from 1979 to 2013. ROA is the ratio of EBIT to assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching (see text for details). Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. M/B is the the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Percent Sought is the number of shares sought in the repurchases scaled by the total shares outstanding. The The p-value is noted in the parentheses.

	Net ROA Change		
Intercept	-0.044	-0.044	-0.044
	(0.01)	(0.01)	(0.01)
Large Customers	-0.014		
	(0.02)		
Top Large Customer		-0.052	
		(0.04)	
All Large Customers			-0.041
			(0.05)
Size	0.002	0.002	0.002
	(0.01)	(0.01)	(0.01)
M / B	-0.002	-0.002	-0.002
	(0.15)	(0.15)	(0.15)
Capital Expenditure	-0.133	-0.133	-0.134
	(0.01)	(0.01)	(0.01)
R&D	0.113	0.112	0.112
	(0.01)	(0.01)	(0.01)
Leverage	0.023	0.023	0.023
	(0.03)	(0.03)	(0.03)
Tangibility	0.022	0.022	0.022
	(0.01)	(0.01)	(0.01)
Sales Growth	-0.077	-0.078	-0.078
	(0.07)	(0.07)	(0.07)
Cash Flow Volatility	0.048	0.048	0.049
	(0.12)	(0.12)	(0.12)
Percent Sought	-0.011	-0.011	-0.011
	(0.48)	(0.48)	(0.48)
Number of Observations	8278	8278	8278
Adjusted R Squared	0.01	0.01	0.01

Table 3.5. Bargaining Position

Panel A: Bargaining position and announcement return of share repurchases

This table shows the relation between the bargaining position of large customers and the announcement return of share repurchases. I use a sample of 8278 repurchase events from 1979 to 2013. CAR is the cumulative abnormal return over days (-1, 1) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Relative Size 1 is a ratio of average market value of the customer to the market value of the supplier firm. Relative Size 2 is calculated by the average market value of firms in the industries that the customer belongs to divided by the market value of the supplier firm. I use the concentration ratio of customers as industry-level proxies for the presence of large customers. Concentration 1 is defined as the average of the firm's Herfindahl-Hirschman index value in the industries that the customer belongs to. Concentration 2 is the average of the ratio of the market value of customer firm to the average market value of firms in the industries that the customer belongs to. Run-up (prior 6 months) is the abnormal stock price return from month -6 to month 0 relative to the announcement date (see text for details). Percent Sought is the number of shares sought in the repurchases scaled by the total shares outstanding. Size is the logarithm of total assets. M/B is the the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. The The p-value is noted in the parentheses.

	CAR (-1, 1)			
Intercept	0.146	0.143	0.132	0.132
	(0.01)	(0.01)	(0.01)	(0.01)
Relative Size 1	-0.002			
	(0.01)			
Relative Size 2		-0.002		
		(0.01)		
Concentration 1			-0.011	
			(0.09)	
Concentration 2				-0.001
				(0.02)
Run-up	-0.046	-0.046	-0.046	-0.046
	(0.01)	(0.01)	(0.01)	(0.01)
Percent Sought	0.109	0.110	0.109	0.109
	(0.01)	(0.01)	(0.01)	(0.01)
Size	-0.006	-0.006	-0.005	-0.005
	(0.01)	(0.01)	(0.01)	(0.01)
M / B	-0.003	-0.003	-0.003	-0.003
	(0.01)	(0.01)	(0.01)	(0.01)
Capital Expenditure	0.013	0.014	0.016	0.017
	(0.47)	(0.43)	(0.38)	(0.36)
R&D	0.040	0.039	0.042	0.042
	(0.01)	(0.01)	(0.01)	(0.01)
Leverage	0.001	0.001	0.002	0.001
	(0.93)	(0.88)	(0.77)	(0.83)
Cash Flow	-0.050	-0.051	-0.049	-0.049
	(0.01)	(0.01)	(0.01)	(0.01)
Tangibility	-0.002	-0.002	-0.002	-0.002
	(0.45)	(0.44)	(0.41)	(0.39)
Sales Growth	0.045	0.041	0.044	0.046
	(0.01)	(0.02)	(0.02)	(0.01)
Cash Flow Volatility	0.103	0.103	0.103	0.103
	(0.01)	(0.01)	(0.01)	(0.01)
Number of Observations	8411	8411	8411	8411
Adjusted R Squared	0.10	0.10	0.10	0.10

Table 3.5 (Continued)

Panel B: Bargaining position and operating performance of share repurchases

This table shows the relation between the bargaining position of large customers and the operating performance of share repurchases. I use a sample of 8278 repurchase events from 1979 to 2013. ROA is the ratio of EBIT to assets. ∆ROA is the change in ROA from year t-1 to t+1. Net ∆ROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are the non-event firms in the same industry which have the closest size and M/B ratio (see text for details). Relative Size 1 is a ratio of the average market value of customer to the market value of the supplier firm. Relative Size 2 is calculated by the average market value of firms in the industries that the customer belongs to divided by the market value of the supplier firm. I use the concentration ratio of customers as industry-level proxies for the presence of large customers. Concentration 1 is defined as the average of firm's Herfindahl-Hirschman index value in the industries that the customer belongs to. Concentration 2 is the average of the ratio of the market value of customer firm to the average market value of firms in the industries that the customer belongs to. Size is the logarithm of total assets. M/B is the the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Percent Sought is the number of shares sought in the repurchases scaled by the total shares outstanding. The The p-value is noted in the parentheses.

			Net ROA Change	
Intercept	-0.041	-0.041	-0.037	-0.044
	(0.02)	(0.02)	(0.04)	(0.01)
Relative Size 1	-0.002			
	(0.05)			
Relative Size 2		-0.002		
		(0.08)		
Concentration Ratio 1			-0.044	
			(0.05)	
Concentration Ratio 2				-0.001
				(0.07)
Size	0.002	0.002	0.002	0.002
	(0.01)	(0.01)	(0.01)	(0.01)
M / B	-0.002	-0.002	-0.002	-0.002
	(0.13)	(0.13)	(0.17)	(0.16)
Capital Expenditure	-0.136	-0.137	-0.137	-0.134
	(0.01)	(0.01)	(0.01)	(0.01)
R&D	0.113	0.111	0.109	0.113
	(0.01)	(0.01)	(0.01)	(0.01)
Leverage	0.023	0.023	0.023	0.023
	(0.03)	(0.03)	(0.03)	(0.03)
Tangibility	0.022	0.022	0.021	0.021
	(0.01)	(0.01)	(0.01)	(0.01)
Sales Growth	-0.079	-0.078	-0.080	-0.078
	(0.06)	(0.06)	(0.06)	(0.06)
Cash Flow Volatility	0.051	0.051	0.050	0.051
	(0.10)	(0.10)	(0.11)	(0.10)
Percent Sought	-0.011	-0.011	-0.011	-0.011
	(0.48)	(0.48)	(0.48)	(0.47)
Number of Observations	8278	8278	8278	8278
Adjusted R Squared	0.01	0.01	0.01	0.01

Table 3.6. Robustness Checks: Heckman Two-Stage Estimation

Panel A: Large Customers and the Announcement Returns of Share Repurchases

This table shows the robustness checks using the Heckman two-stage estimation. I use a sample of 8411 repurchase events from 1979 to 2013. CAR is the cumulative abnormal return over days (-1, 1) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. M/B is the the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Percent Sought is the number of shares sought in the repurchases scaled by the total shares outstanding. Inverse Mills Ratio is calculated based on the estimates in the probit regression reported in Table 5 (see text for details). The The p-value is noted in the parentheses.

	CAR (-1, 1)		
Intercept	0.133	0.131	0.131
	(0.01)	(0.01)	(0.01)
Large Customers	-0.010		
	(0.01)		
Top Large Customer		-0.025	
		(0.04)	
All Large Customers			-0.022
			(0.03)
Run-up (prior 6 months)	-0.046	-0.046	-0.046
	(0.01)	(0.01)	(0.01)
Percent Sought	0.109	0.109	0.109
	(0.01)	(0.01)	(0.01)
Size	-0.005	-0.005	-0.005
	(0.01)	(0.01)	(0.01)
M / B	-0.003	-0.003	-0.003
	(0.01)	(0.01)	(0.01)
Capital Expenditure	0.018	0.017	0.017
	(0.32)	(0.34)	(0.34)
R&D	0.043	0.042	0.042
	(0.01)	(0.01)	(0.01)
Leverage	0.001	0.001	0.001
	(0.85)	(0.83)	(0.85)
Cash Flow	-0.048	-0.048	-0.048
	(0.01)	(0.01)	(0.01)
Tangibility	-0.002	-0.002	-0.002
	(0.41)	(0.41)	(0.40)
Sales Growth	0.039	0.044	0.044
	(0.03)	(0.02)	(0.02)
Cash Flow Volatility	0.102	0.102	0.102
	(0.01)	(0.01)	(0.01)
IMR	-0.001	-0.001	-0.001
	(0.49)	(0.48)	(0.48)
Number of Observations	8411	8411	8411
Adjusted R Squared	0.10	0.10	0.10

Table 3.6 Continued

Panel B. Large Customers and the Operating Performance of Share Repurchases

This table shows the robustness checks using the Heckman two-stage estimation. I use a sample of 8278 repurchase events with Net ROA Change from 1979 to 2013. ROA is the ratio of EBIT to assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching (see text for details). Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. M/B is the the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Percent Sought is the number of shares sought in the repurchases scaled by the total shares outstanding. The Inverse Mills Ratio is calculated based on the estimates in the probit regression reported in Table 5 (see text for details). The The p-value is noted in the parentheses.

	Net ROA Change		
Intercept	-0.038	-0.038	-0.039
	(0.03)	(0.03)	(0.03)
Large Customers	-0.013		
	(0.04)		
Top Large Customer		-0.046	
		(0.07)	
All Large Customers			-0.036
			(0.09)
Size	0.002	0.002	0.002
	(0.03)	(0.03)	(0.03)
M / B	-0.002	-0.002	-0.002
	(0.31)	(0.32)	(0.31)
Capital Expenditure	-0.116	-0.116	-0.116
	(0.01)	(0.01)	(0.01)
R&D	0.127	0.126	0.126
	(0.01)	(0.01)	(0.01)
Leverage	0.027	0.027	0.027
	(0.01)	(0.01)	(0.01)
Tangibility	0.028	0.028	0.028
	(0.01)	(0.01)	(0.01)
Sales Growth	-0.078	-0.079	-0.079
	(0.06)	(0.06)	(0.06)
Cash Flow Volatility	0.057	0.058	0.058
	(0.07)	(0.07)	(0.06)
Percent Sought	-0.008	-0.008	-0.008
	(0.60)	(0.61)	(0.60)
IMR	-0.007	-0.007	-0.007
	(0.01)	(0.01)	(0.01)
Number of Observations	8278	8278	8278
Adjusted R Squared	0.01	0.01	0.01

Table 3.7. Univariate Statistics

This table shows univariate statistics. I use a sample of 25,928 events of dividend increase from 1979 to 2013. CAR is the cumulative abnormal return over days (-1, +1) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Dividends is the ratio of the amount of dividends to total assets. Percent Sought is the number of shares sought in the repurchases scaled by the total shares outstanding. Run-up (prior 6 months) is the abnormal stock price return from month -6 to month 0 relative to the announcement date (see text for details). Size is the logarithm of total assets. M/B is the the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Firm Age is the age of the firm. Turnover is the ratio of the monthly trading volume to the total shares outstanding. The The p-value is noted in the parentheses.

Variables	Mean	Median	25th Pctl	75th Pctl	Std Dev
Dividend CAR (-1, +1)	0.0095	0.0049	-0.0122	0.0248	0.0375
Large Customers	0.0516	0.0000	0.0000	0.0000	0.2212
Top Large Customer	0.2055	0.1460	0.1207	0.2140	0.1585
All Large Customers	0.2322	0.1600	0.1258	0.2744	0.1765
Dividend	0.0251	0.0148	0.0050	0.0288	0.0548
Run-up	0.1139	0.0970	-0.0135	0.2216	0.2213
Dividend Change	0.0451	0.0200	0.0100	0.0350	0.2386
Size	20.6313	20.6762	19.2735	21.9019	1.9058
M / B	1.6537	1.4013	1.1166	1.9006	0.8379
Capital Expenditure	0.0720	0.0586	0.0336	0.0932	0.0575
R & D	0.0110	0.0000	0.0000	0.0084	0.0327
Leverage	0.2109	0.1970	0.0819	0.3160	0.1558
Cash Flow	0.1697	0.1573	0.1180	0.2092	0.0768
Tangibility	0.6054	0.5754	0.3450	0.8623	0.3366
Sale Growth	0.1273	0.0796	0.0796	0.1375	0.1725
Cash Flow Volatility	0.1542	0.1531	0.1531	0.1531	0.0245
Firm Age	25.5623	23.0000	13.0000	35.0000	15.8698
Turnover	0.0692	0.0410	0.0174	0.0871	0.0874

Table 3.8. Univariate analysis on the value of dividend increases

This table shows univariate analysis on the value of dividend increases. Panel A shows the univariate analysis on the announcement return of dividend increases. This is a sample of 25,928 events of share repurchases with CAR from 1979 to 2013. CAR is the cumulative abnormal return over days around the announcement date (-1, 1) and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Panel B shows univariate analysis on the operating performance of share repurchases. This is a sample of 17,264 events of share repurchases from 1979 to 2013. ROA is the ratio of EBIT to assets. ∆ROA is the change in ROA from year t-1 to t+1. Net ∆ROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. I conduct the mean test and the median test for the difference, and report the p-value in the table.

Panel A: Univariate analysis on the announcement returns of dividend increases

Dividend Increase CAR (-1, +1)				
	With Large Customers	Without Large Customers	Difference	P-value
Mean	0.0111	0.0089	0.0022	0.02
Median	0.0053	0.0049	0.0004	0.67

Panel B: Univariate analysis on the operating performance of dividend increases

Net Change in ROA				
	With Large Customers	Without Large Customers	Difference	P-value
Mean	0.0157	0.0099	0.0058	0.07
Median	0.0014	0.0001	0.0013	0.51

Table 3.9. Large Customers and the Announcement Returns of Dividend Increases

This table shows the relation between announcement returns of dividend increases and the presence of large customers. I use a sample of 25,928 dividend increase events from 1979 to 2013. CAR is the cumulative abnormal return over days (-1, 1) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Run-up (prior 6 months) is the abnormal stock price return from month -6 to month 0 relative to the announcement date (see text for details). Dividend Change is the difference between the amount of dividends in year t=0 and in year t-1. Size is the logarithm of total assets. M/B is the the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. The The p-value is noted in the parentheses.

	CAR (-1, 1)		
Intercept	0.050	0.050	0.050
	(0.01)	(0.01)	(0.01)
Large Customers	0.001		
	(0.15)		
Top Large Customer		0.011	
		(0.01)	
All Large Customers			0.010
			(0.01)
Run-up (prior 6 months)	-0.010	-0.010	-0.010
	(0.01)	(0.01)	(0.01)
Dividend Change	0.010	0.010	0.010
	(0.01)	(0.01)	(0.01)
Size	-0.002	-0.002	-0.002
	(0.01)	(0.01)	(0.01)
M / B	-0.002	-0.002	-0.002
	(0.01)	(0.01)	(0.01)
Capital Expenditure	-0.018	-0.018	-0.017
	(0.01)	(0.01)	(0.01)
R&D	0.038	0.038	0.038
	(0.01)	(0.01)	(0.01)
Leverage	0.004	0.004	0.004
	(0.01)	(0.01)	(0.01)
Cash Flow	0.007	0.007	0.007
	(0.06)	(0.05)	(0.05)
Tangibility	0.001	0.001	0.001
	(0.36)	(0.40)	(0.37)
Sales Growth	-0.001	-0.001	-0.001
	(0.85)	(0.76)	(0.75)
Cash Flow Volatility	0.019	0.019	0.019
	(0.03)	(0.03)	(0.03)
Number of Observations	25928	25928	25928
Adjusted R Squared	0.02	0.02	0.02

Table 3.10. Large Customers and the Operating Performance of Dividend Increases

This table shows the relation between the operating performance of dividend increases and the presence of large customers. I use a sample of 17,264 dividend increases events from 1979 to 2013. ROA is the ratio of EBIT to assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching (see text for details). Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. M/B is the the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. Leverage is the ratio of long-term debts to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Dividend Change is the difference between the amount of dividends in year t=0 and in year t-1. The The p-value is noted in the parentheses.

	Net ROA Change		
Intercept	0.046	0.062	0.058
	(0.01)	(0.01)	(0.01)
Large Customers	0.005		
	(0.09)		
Top Large Customer		0.022	
		(0.10)	
All Large Customers			0.020
			(0.09)
Size	-0.003	-0.003	-0.003
	(0.01)	(0.01)	(0.01)
M / B	0.011	0.012	0.012
	(0.01)	(0.01)	(0.01)
Capital Expenditure	-0.054	-0.045	-0.046
	(0.01)	(0.01)	(0.01)
Leverage	-0.003	-0.006	-0.006
	(0.52)	(0.28)	(0.25)
Tangibility	0.004	0.004	0.003
	(0.10)	(0.16)	(0.17)
Sales Growth	-0.002	-0.001	-0.002
	(0.60)	(0.65)	(0.63)
Cash Flow Volatility	0.025	0.075	0.074
	(0.55)	(0.06)	(0.06)
Dividend Change	0.010	0.011	0.011
	(0.21)	(0.16)	(0.16)
Number of Observations	17264	17264	17264
Adjusted R Squared	0.01	0.01	0.01

Table 3.11. Relationship-Specific Investment and Dividend Increases

This table shows how the relationship-specific investment affects the relation between large customers and the announcement return of dividend increases. I use a sample of 25,928 dividend increase events from 1979 to 2013. CAR is the cumulative abnormal return over days (-1, 1) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Key Customers R&D is defined as the ratio of each customer's R&D to total assets, multiplied by the percentage of firm's sales to each customer. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Run-up (prior 6 months) is the abnormal stock price return from month -6 to month 0 relative to the announcement date (see text for details). Dividend Change is the difference between the amount of dividends in year t=0 and in year t-1. Size is the logarithm of total assets. M/B is the the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. The The p-value is noted in the parentheses.

	CAR (-1, 1)		
Intercept	0.038	0.038	0.038
	(0.01)	(0.01)	(0.01)
Key Customer R&D	0.062	-0.207	-0.239
	(0.71)	(0.13)	(0.09)
Large Customers	0.000		0.003
	(0.72)		
Large Customers * Key Customers R&D	-0.057		
	(0.79)		
Top Large Customer		0.003	
		(0.40)	
Top Large Customer * Key Customers R&D		0.955	
		(0.06)	
All Large Customers			
			(0.37)
All Large Customers * Key Customers R&D			0.922
			(0.03)
Run-up	-0.010	-0.010	-0.010
	(0.01)	(0.01)	(0.01)
Dividend Change	0.007	0.007	0.007
	(0.01)	(0.01)	(0.01)
Size	-0.001	-0.001	-0.001
	(0.01)	(0.01)	(0.01)
M / B	-0.002	-0.002	-0.002
	(0.01)	(0.01)	(0.01)
Capital Expenditure	-0.015	-0.015	-0.015
	(0.01)	(0.01)	(0.01)
R&D	0.033	0.034	0.033
	(0.01)	(0.01)	(0.01)
Leverage	0.004	0.004	0.004
	(0.01)	(0.01)	(0.01)
Cash Flow	0.009	0.009	0.009
	(0.01)	(0.01)	(0.01)
Tangibility	0.002	0.002	0.002
	(0.01)	(0.01)	(0.01)
Sales Growth	0.000	0.000	0.000
	(0.93)	(0.98)	(0.98)
Cash Flow Volatility	0.027	0.027	0.027
	(0.01)	(0.01)	(0.01)
Number of Observations	25928	25928	25928
Adjusted R Squared	0.02	0.02	0.02

Table 3.12. Signalling Effect of Dividend Increases

Panel A: Large Customers and Announcement Return of Dividend Increases

This table shows the signalling effects of dividend increases on the relation between large customers and the announcement returns. I use a sample of 24,893 dividend increases events with forecast estimates from 1979 to 2013. CAR is the cumulative abnormal return over days (-1, 1) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Forecast Error is the absolute difference between the median forecast of EPS and the actual EPS, divided by the median forecast EPS. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Dividend Change is the difference between the amount of dividends in year t=0 and in year t-1. Run-up (prior 6 months) is the abnormal stock price return from month -6 to month 0 relative to the announcement date (see text for details). Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. The p-value is noted in the parentheses.

	CAR (-1, 1)		
Intercept	0.039	0.039	0.039
	(0.01)	(0.01)	(0.01)
Forecast Error	0.002	0.003	0.003
	(0.03)	(0.02)	(0.03)
Large Customers	-0.001		
	(0.71)		
Large Customers * Forecast Error	0.019		
	(0.01)		
Top Large Customer		-0.001	
		(0.98)	
Top Large Customer * Forecast Error		0.065	
		(0.01)	
All Large Customers			-0.001
			(0.86)
All Large Customers * Forecast Error			0.066
			(0.01)
Run-up (prior 6 months)	-0.015	-0.015	-0.015
	(0.01)	(0.01)	(0.01)
Dividend Change	0.011	0.011	0.011
	(0.01)	(0.01)	(0.01)
Size	-0.002	-0.002	-0.002
	(0.01)	(0.01)	(0.01)
M / B	-0.003	-0.003	-0.003
	(0.01)	(0.01)	(0.01)
Capital Expenditure	-0.019	-0.019	-0.019
	(0.01)	(0.01)	(0.01)
R&D	0.034	0.034	0.034
	(0.01)	(0.01)	(0.01)
Leverage	0.007	0.007	0.007
	(0.01)	(0.01)	(0.01)
Cash Flow	0.023	0.023	0.023
	(0.01)	(0.01)	(0.01)
Tangibility	0.002	0.002	0.002
	(0.02)	(0.02)	(0.02)
Sales Growth	-0.006	-0.006	-0.006
	(0.03)	(0.03)	(0.03)
Cash Flow Volatility	0.033	0.033	0.033
	(0.01)	(0.01)	(0.01)
Number of Observations	24893	24893	24893
Adjusted R Squared	0.02	0.02	0.02

Table 3.12. Continued

Panel B: Large Customers and Operating Performance of Dividend Increases

This table shows the signalling effects of dividend increases on the relation between large customers and the firm's operating performance. I use a sample of 12,201 dividend increases events with forecast estimates from 1979 to 2013. ROA is the ratio of EBIT to assets. ∆ROA is the change in ROA from year t-1 to t+1. Net ∆ROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching (see text for details). Forecast Error is the absolute difference between the median forecast and actual earnings as a percentage of the median forecast. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Dividend Change is the difference between the amount of dividends in year t=0 and in year t-1. The p-value is noted in the parentheses.

	Net ROA Change		
Intercept	0.103	0.113	0.105
	(0.01)	(0.01)	(0.01)
Forecast Error	0.001	0.001	0.001
	(0.75)	(0.79)	(0.76)
Large Customers	0.004		
	(0.29)		
Large Customers * Forecast Error	0.023		
	(0.37)		
Top Large Customer		0.013	
		(0.50)	
Top Large Customer * Forecast Error		0.179	
		(0.10)	
All Large Customers			0.010
			(0.56)
All Large Customers * Forecast Error			0.171
			(0.09)
Size	-0.005	-0.005	-0.005
	(0.01)	(0.01)	(0.01)
M / B	0.019	0.019	0.019
	(0.01)	(0.01)	(0.01)
Capital Expenditure	0.020	0.017	0.019
	(0.29)	(0.35)	(0.32)
R&D	0.079	0.078	0.077
	(0.05)	(0.04)	(0.05)
Leverage	-0.017	-0.017	-0.018
	(0.01)	(0.01)	(0.01)
Cash Flow	-0.089	-0.078	-0.079
	(0.01)	(0.01)	(0.01)
Tangibility	0.003	0.003	0.002
	(0.27)	(0.35)	(0.40)
Sales Growth	-0.012	-0.009	-0.010
	(0.01)	(0.01)	(0.01)
Cash Flow Volatility	0.039	0.077	0.074
	(0.39)	(0.08)	(0.09)
Dividend Change	-0.078	-0.059	-0.064
	(0.01)	(0.01)	(0.01)
Number of Observations	12201	12201	12201
Adjusted R Squared	0.03	0.03	0.03

Table 3.13. Robustness Checks: Heckman Two-Stage Estimation

Panel A: Large Customers and the Announcement Returns of Dividend Increases

This table shows the robustness checks on the relation between Large Customers and the Announcement Returns of Dividend Increases by using Heckman two-stage estimation. I use a sample of 25928 dividend increases events from 1979 to 2013. CAR is the cumulative abnormal return over days (-1, 1) around the announcement date and is calculated using the market model with the CRSP equally weighted index as the market return (see text for details). Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Run-up (prior 6 months) is the abnormal stock price return from month -6 to month 0 relative to the announcement date (see text for details). Dividend Change is the difference between the amount of dividends in year t=0 and in year t-1. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Size is the logarithm of total assets. The Inverse Mills Ratio is calculated based on the estimates in the probit regression reported in Table 12 (see text for details). The p-value is noted in the parentheses.

	CAR (-1, 1)		
Intercept	0.055	0.055	0.055
	(0.01)	(0.01)	(0.01)
Large Customers	0.001		
	(0.40)		
Top Large Customer		0.009	
		(0.02)	
All Large Customers			0.009
			(0.01)
Run-up (prior 6 months)	-0.010	-0.010	-0.010
	(0.01)	(0.01)	(0.01)
Dividend Change	0.011	0.011	0.011
	(0.01)	(0.01)	(0.01)
Size	-0.002	-0.002	-0.002
	(0.01)	(0.01)	(0.01)
M / B	-0.002	-0.002	-0.002
	(0.01)	(0.01)	(0.01)
Capital Expenditure	-0.019	-0.019	-0.019
	(0.01)	(0.01)	(0.01)
R&D	0.041	0.040	0.040
	(0.01)	(0.01)	(0.01)
Leverage	0.005	0.005	0.005
	(0.01)	(0.01)	(0.01)
Cash Flow	0.003	0.004	0.004
	(0.39)	(0.37)	(0.38)
Tangibility	0.001	0.001	0.001
	(0.40)	(0.41)	(0.41)
Sales Growth	-0.001	-0.001	-0.001
	(0.86)	(0.80)	(0.79)
Cash Flow Volatility	0.026	0.026	0.026
	(0.01)	(0.01)	(0.01)
IMR	-0.001	-0.001	-0.001
	(0.22)	(0.20)	(0.20)
Number of Observations	25928	25928	25928
Adjusted R Squared	0.02	0.02	0.02

Table 3.13. Continued

Panel B: Large Customers and the Operating Performance of Dividend Increases
This table shows the robustness checks on the relation between large customers and the operating performance of dividend increases by using Heckman two-stage estimation. I use a sample of 17,264 dividend increases events from 1979 to 2013. ROA is the ratio of EBIT to assets. ΔROA is the change in ROA from year t-1 to t+1. Net ΔROA is the difference between an acquirer's change in ROA and its matched comparable firm's change in ROA from year t-1 to t+1. The comparable firms are matched by propensity score matching (see text for details). Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Tangibility is the ratio of plant, property and equipment to assets. Sales Growth is the percentage change in sales over the previous year. Cash Flow Volatility is the standard deviation of the ratio of income before extraordinary items to assets in the prior 5 years. Dividend Change is the difference between the amount of dividends in year t=0 and in year t-1. Size is the logarithm of total assets. Inverse Mills Ratio is calculated based on the estimates in the probit regression reported in Table 12 (see text for details). The p-value is noted in the parentheses.

	Net ROA Change		
Intercept	0.052	0.071	0.066
	(0.01)	(0.01)	(0.01)
Large Customers	0.005		
	(0.10)		
Top Large Customer		0.022	
		(0.10)	
All Large Customers			0.020
			(0.10)
Size	-0.002	-0.003	-0.003
	(0.01)	(0.01)	(0.01)
M / B	0.011	0.013	0.013
	(0.01)	(0.01)	(0.01)
Capital Expenditure	-0.053	-0.040	-0.044
	(0.01)	(0.01)	(0.01)
Leverage	-0.005	-0.007	-0.006
	(0.40)	(0.14)	(0.22)
Tangibility	0.004	0.003	0.003
	(0.13)	(0.29)	(0.21)
Sales Growth	-0.003	-0.002	-0.002
	(0.44)	(0.47)	(0.47)
Cash Flow Volatility	0.007	0.074	0.054
	(0.87)	(0.06)	(0.18)
Dividend Change	0.009	0.010	0.010
	(0.25)	(0.19)	(0.20)
IMR	0.019	0.018	0.018
	(0.01)	(0.01)	(0.01)
Number of Observations	17264	17264	17264
Adjusted R Squared	0.01	0.02	0.01

Table 3.14. Probit Regression of Share Repurchases

This table shows the relation between the presence of large customers and the probability of share repurchases. I use a sample of 86,164 firm-year observations from 1979 to 2013. Share Repurchases is a dummy variable which equals one if the firm repurchase shares, and equals zero otherwise. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Dividends is the ratio of dividends to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Sales Growth is the percentage change in sales over the previous year. Firm Age is the age of the firm. Turnover is the ratio of the monthly trading volume to the total shares outstanding. The p-value is noted in the parentheses.

	Share Repurchases		
Intercept	-5.203	-5.177	-5.181
	(0.01)	(0.01)	(0.01)
Large Customers	0.189		
	(0.01)		
Top Large Customer		0.424	
		(0.01)	
All Large Customers			0.393
			(0.01)
Size	0.146	0.145	0.145
	(0.01)	(0.01)	(0.01)
M / B	0.006	0.006	0.006
	(0.39)	(0.44)	(0.43)
Capital Expenditure	-1.142	-1.133	-1.133
	(0.01)	(0.01)	(0.01)
R&D	1.061	1.096	1.091
	(0.01)	(0.01)	(0.01)
Leverage	-1.286	-1.286	-1.286
	(0.01)	(0.01)	(0.01)
Cash Flow	3.176	3.176	3.177
	(0.01)	(0.01)	(0.01)
Sales Growth	-0.027	-0.027	-0.027
	(0.08)	(0.07)	(0.07)
Firm Age	0.006	0.006	0.006
	(0.01)	(0.01)	(0.01)
Turnover	0.591	0.602	0.598
	(0.01)	(0.01)	(0.01)
Number of Observations	86164	86164	86164
Adjusted R Squared	0.05	0.05	0.05

Table 3.15. Probit Regression of Dividend Increases

This table shows the relation between the presence of large customers and the probability of dividend increases. I use a sample of 65,314 firm-year observations from 1979 to 2013. Dividend Increases is a dummy variable which equals one if the firm increases dividends and equals zero otherwise. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Sales Growth is the percentage change in sales over the previous year. Firm Age is the age of the firm. Turnover is the ratio of the monthly trading volume to the total shares outstanding. The p-value is noted in the parentheses.

	Dividends		
Intercept	-5.479	-5.467	-5.463
	(0.01)	(0.01)	(0.01)
Large Customers	-0.305		
	(0.01)		
Top Large Customer		-1.596	
		(0.01)	
All Large Customers			-1.412
			(0.01)
Size	0.266	0.266	0.266
	(0.01)	(0.01)	(0.01)
M / B	0.079	0.077	0.076
	(0.01)	(0.01)	(0.01)
Capital Expenditure	-2.846	-2.838	-2.836
	(0.01)	(0.01)	(0.01)
R&D	-6.633	-6.603	-6.578
	(0.01)	(0.01)	(0.01)
Leverage	-0.295	-0.296	-0.297
	(0.01)	(0.01)	(0.01)
Cash Flow	10.338	10.359	10.356
	(0.01)	(0.01)	(0.01)
Sales Growth	0.851	0.852	0.852
	(0.01)	(0.01)	(0.01)
Firm Age	-0.002	-0.002	-0.002
	(0.01)	(0.01)	(0.01)
Turnover	-3.605	-3.605	-3.603
	(0.01)	(0.01)	(0.01)
Number of Observations	65314	65314	65314
Adjusted R Squared	0.09	0.09	0.09

Table 3.16. Large Customers and the Level of Total Payout

This table shows the relation between the presence of large customers and the level of total payout. I use a sample of 86,165 firm-year observations from 1979 to 2013. Total Payout is defined as the sum of the amount of share repurchases and dividends. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Sales Growth is the percentage change in sales over the previous year. Firm Age is the age of the firm. Turnover is the ratio of the monthly trading volume to the total shares outstanding. I cluster the standard errors by firm and year. The p-value is noted in the parentheses.

	Total Payout		
Intercept	-0.051	-0.050	-0.051
	(0.01)	(0.01)	(0.01)
Large Customers	-0.002		
	(0.01)		
Top Large Customer		-0.007	
		(0.01)	
All Large Customers			-0.005
			(0.01)
Size	0.004	0.004	0.004
	(0.01)	(0.01)	(0.01)
M / B	0.004	0.004	0.004
	(0.01)	(0.01)	(0.01)
Capital Expenditure	-0.029	-0.029	-0.029
	(0.01)	(0.01)	(0.01)
R&D	0.005	0.005	0.005
	(0.33)	(0.32)	(0.33)
Leverage	-0.026	-0.026	-0.026
	(0.01)	(0.01)	(0.01)
Cash Flow	0.064	0.064	0.064
	(0.01)	(0.01)	(0.01)
Sales Growth	-0.001	-0.001	-0.001
	(0.03)	(0.03)	(0.03)
Firm Age	0.001	0.001	0.001
	(0.01)	(0.01)	(0.01)
Turnover	-0.010	-0.010	-0.010
	(0.01)	(0.01)	(0.01)
Number of Observations	86165	86165	86165
Adjusted R Squared	0.07	0.07	0.07

Table 3.17. Large Customers and the Level of Share Repurchases

This table shows the relation between the presence of large customers and the level of share repurchases. I use a sample of 86,165 firm-year observations from 1979 to 2013. Share Repurchases is defined as the amount of share repurchases to total assets. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Sales Growth is the percentage change in sales over the previous year. Firm Age is the age of the firm. Turnover is the ratio of the monthly trading volume to the total shares outstanding. I cluster the standard errors by firm and year. The p-value is noted in the parentheses.

	Share Repurchases		
Intercept	-0.028	-0.028	-0.028
	(0.01)	(0.01)	(0.01)
Presence of Large Customers	-0.001		
	(0.08)		
Top Large Customer		-0.006	
		(0.01)	
All Large Customers			-0.004
			(0.01)
Size	0.002	0.002	0.002
	(0.01)	(0.01)	(0.01)
M / B	0.002	0.002	0.002
	(0.01)	(0.01)	(0.01)
Capital Expenditure	-0.034	-0.033	-0.033
	(0.01)	(0.01)	(0.01)
R&D	0.020	0.020	0.020
	(0.01)	(0.01)	(0.01)
Leverage	-0.018	-0.018	-0.018
	(0.01)	(0.01)	(0.01)
Cash Flow	0.045	0.045	0.045
	(0.01)	(0.01)	(0.01)
Sales Growth	-0.001	-0.001	-0.001
	(0.01)	(0.01)	(0.01)
Firm Age	0.001	0.001	0.001
	(0.69)	(0.70)	(0.70)
Turnover	0.015	0.015	0.015
	(0.01)	(0.01)	(0.01)
Number of Observations	86165	86165	86165
Adjusted R Squared	0.04	0.04	0.04

Table 3.18. Large Customers and the Level of Dividends

This table shows the relation between the presence of large customers and the level of dividends. I use a sample of 65,314 firm-year observations from 1979 to 2013. Dividends is defined as the amount of dividends to total assets. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Sales Growth is the percentage change in sales over the previous year. Firm Age is the age of the firm. Turnover is the ratio of the monthly trading volume to the total shares outstanding. I cluster the standard errors by firm and year. The p-value is noted in the parentheses.

	Dividends		
Intercept	0.082	0.082	0.082
	(0.01)	(0.01)	(0.01)
Presence of Large Customers	-0.003		
	(0.01)		
Top Large Customer		-0.014	
		(0.01)	
All Large Customers			-0.006
			(0.07)
Size	-0.005	-0.005	-0.005
	(0.01)	(0.01)	(0.01)
M / B	0.024	0.024	0.024
	(0.01)	(0.01)	(0.01)
Capital Expenditure	-0.126	-0.126	-0.126
	(0.01)	(0.01)	(0.01)
R&D	-0.208	-0.209	-0.209
	(0.01)	(0.01)	(0.01)
Leverage	0.031	0.031	0.031
	(0.01)	(0.01)	(0.01)
Cash Flow	0.255	0.255	0.255
	(0.01)	(0.01)	(0.01)
Sales Growth	-0.024	-0.024	-0.024
	(0.01)	(0.01)	(0.01)
Firm Age	0.001	0.001	0.001
	(0.01)	(0.01)	(0.01)
Turnover	-0.004	-0.004	-0.004
	(0.18)	(0.18)	(0.18)
Number of Observations	65314	65314	65314
Adjusted R Squared	0.27	0.27	0.27

Table 3.19. Large Customers and the Level of Dividends – Alternative Measures of Dividends

This table shows the relation between the presence of large customers and the level of dividends. I use a sample of 60,619 firm-year observations from 1979 to 2013. DIV/ME is defined as the amount of dividend increases to the market value of equity. DIV/NI is defined as the amount of dividend increases to net income. Large Customer is a dummy variable which equals one if a firm has at least one large customer, and equals zero otherwise. Top Large Customer is the ratio of the purchases made by the Top Large Customer to the total sales of the firm. All Large Customers is the ratio of the purchases made by all large customers to the total sales of the firm. Size is the logarithm of total assets. M/B is the market value of equity plus assets minus the book value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to assets. R&D is the ratio of R&D to assets. Leverage is the ratio of long-term debts to assets. Cash Flow is the ratio of income before extraordinary items to assets. Sales Growth is the percentage change in sales over the previous year. Firm Age is the age of the firm. Turnover is the ratio of the monthly trading volume to the total shares outstanding. The p-value is noted in the parentheses.

Panel A: Large customers and the ratio of dividends to the market value of equity

	DIV/ME		
Intercept	0.052	0.052	0.051
	(0.01)	(0.01)	(0.01)
Large Customers	-0.003		
	(0.01)		
Top Large Customer		-0.012	
		(0.01)	
All Large Customers			-0.005
			(0.01)
Size	-0.001	-0.001	-0.001
	(0.01)	(0.01)	(0.01)
M / B	-0.013	-0.013	-0.013
	(0.01)	(0.01)	(0.01)
Capital Expenditure	-0.073	-0.073	-0.074
	(0.01)	(0.01)	(0.01)
R&D	-0.085	-0.085	-0.086
	(0.01)	(0.01)	(0.01)
Leverage	0.050	0.050	0.050
	(0.01)	(0.01)	(0.01)
Cash Flow	0.153	0.153	0.153
	(0.01)	(0.01)	(0.01)
Sales Growth	-0.011	-0.011	-0.011
	(0.01)	(0.01)	(0.01)
Firm Age	-0.001	-0.001	-0.001
	(0.09)	(0.08)	(0.08)
Turnover	-0.035	-0.035	-0.035
	(0.01)	(0.01)	(0.01)
Number of Observations	60619	60619	60619
Adjusted R Squared	0.16	0.16	0.16

Panel B: Large customers and the ratio of dividends to net income

		DIV/NI	
Intercept	3.957	3.961	3.957
	(0.01)	(0.01)	(0.01)
Presence of Large Customers	-0.142		
	(0.02)		
Top Large Customer		-0.913	
		(0.01)	
All Large Customers			-0.513
			(0.01)
Size	-0.155	-0.155	-0.154
	(0.01)	(0.01)	(0.01)
M / B	0.576	0.576	0.576
	(0.01)	(0.01)	(0.01)
Capital Expenditure	-0.658	-0.652	-0.664
	(0.49)	(0.49)	(0.49)
R&D	-0.258	-0.243	-0.260
	(0.72)	(0.73)	(0.72)
Leverage	1.641	1.641	1.640
	(0.01)	(0.01)	(0.01)
Cash Flow	-16.379	-16.373	-16.380
	(0.01)	(0.01)	(0.01)
Sales Growth	-1.008	-1.008	-1.008
	(0.01)	(0.01)	(0.01)
Firm Age	-0.004	-0.004	-0.004
	(0.28)	(0.28)	(0.28)
Turnover	1.486	1.486	1.486
	(0.01)	(0.01)	(0.01)
Number of Observations	60619	60619	60619
Adjusted R Squared	0.01	0.01	0.01

Appendices

Appendix A1. Calculations of Excess Value

I use the Excess Value measure developed by Berger and Ofek (1995). This measure compares a firm's actual market value with an imputed value as if its segments were operated as single-segment firms.

For diversified firms, Excess Value equals the percentage difference between a firm's total value and the total imputed value of the firm's divisions as stand-alone firms. In the first step, I use sales multipliers to estimate the segment imputed values. The following equation demonstrates that the imputed value for each segment is calculated by multiplying the segment's sales by the median ratio of the market value to sales for single-segment firms in the same industry. The imputed value of the firm is the sum of the imputed value for each segment.

$$\mathrm{I(V)} = \sum_{\mathrm{i}=1}^{\mathrm{n}} SALES_{\mathrm{i}} * (\mathrm{Ind_i(V/SALES)_{mf}})$$

In the second step, the following equation shows that the Excess Value is the natural logarithm of the ratio of a firm's actual value to the imputed value.

$$\mathrm{EXVAL} = \mathrm{Ln(V/I(V))}$$

The Excess Value measures the value loss or gain from firm diversification. Positive (negative) Excess Value implies that firm diversification is (not) beneficial for shareholders.

Appendix A2. Segment-level Resource Transfer

I follow Rajan, Servaes and Zingales (2000) and use the variable Segment-level Resource Transfer as the measure of the amount of resource transfer within diversified firms. Segment-level Resource Transfer is the difference between the industry-adjusted investment in a segment and the weighted average industry-adjusted investments across all the segments of a firm. This can be indicated by the following equation:

$$\text{Segment-level Resource Transfer} = \frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} - \sum_{j=1}^{N} w_j \left(\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} \right)$$

where I_j is the capital expenditure of segment j;

BA_j is the book value of assets of segment j;

I_j^{ss}/BA_j^{ss} is the asset-weighted average capital expenditure to assets ratio for the single-segment firms in the corresponding industry;

w_j is the ratio of segment assets to firm assets;

N is the number of segments.

Appendix A3. Supplier Industries R&D Intensity

I follow Kale and Shahrur (2007) and use the variable Supplier Industries R&D as the measure of the level of relationship-specific investments. Supplier Industries R&D is defined as the weighted mean of each supplier's industry R&D, where the weighting is the ratio of the purchase made from each supplier to the costs of goods sold of the firm. This can be indicated by the following equation:

$$Supplier\ Industries\ R\&D = \sum_{\substack{j=1,\\ j\neq i}}^{n} Supplier\ Industries\ R\&D_j * Industry\ Input\ Coefficient_{ji}$$

Where, Supplier Industry $R\&D_j$ is the *j*th supplier industry's R&D expenditure divided by its total assets;

Industry Input $Coefficient_{ji}$ is the dollar amount of the jth supplier industry's output used as an input to produce one dollar of the output of the *j*th industry;

N is the number of supplier industries;

Appendix A4. Key Customer R&D

I follow Kale and Shahrur (2007) and use the variable Key Customers R&D as the measure of the level of relationship-specific investments. Key Customers R&D is defined as the ratio of each customer's R&D to total assets, multiplied by the percentage of firm's sales to each customer. This can be indicated by the following equation.

$$Key\ Customers\ R\&D = \sum_{j=1}^{n} Key\ Customer\ R\&D_j * Key\ Customers\ Percentage\ Sold_j$$

where Key Customer R&Dj is the customer's R&D expenditure divided by its total assets;

$\text{Key Customers Percentage Sold}_j$ is the percentage of firm's sales to each customer;

n is the number of customer firms.

Appendix B. Propensity Score Matching

The table shows the results for the propensity score matching. I use a logistic regression with the observations of acquirers and the observations of non-acquirers from the Compustat database. I match each acquirer firm with a non-acquirer firm by propensity score matching. I define non-acquirers as the firms that do not have any M&As in the same fiscal year as the acquirers. Matched firms are selected based on the nearest propensity score in the entire sample or the same industry as defined by the 2-digit SIC code.

The dependent variable is a dummy variable that equals one if a firm is an acquirer, and equals zero otherwise. Size is the logarithm of assets. M/B is the assets minus the book value of equity plus the market value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. Leverage is the ratio of long-term debt to assets. Cash Flow is the ratio of income before extraordinary items to assets. R&D is the ratio of R&D to assets. Dividends is the ratio of dividends to assets. Sales Growth is the percentage change in sales over the previous year. The p-value is noted in the parentheses.

	Acquirer=1, Non-acquirer=0
Intercept	-7.236
	(0.01)
Size	0.177
	(0.01)
M/B	0.033
	(0.01)
Capital Expenditure	0.980
	(0.01)
Leverage	-0.286
	(0.01)
Cash Flow	2.510
	(0.01)
R&D	2.916
	(0.01)
Dividend	-6.123
	(0.01)
Sales Growth	0.234
	(0.01)
Number of Observations	278457
Pseudo R-square	0.05

Appendix C. Propensity Score Matching

The table shows the results for the propensity score matching. I use a logistic regression. There are 13794 observations of share repurchases and 301930 observations of non-repurchases from the Compustat database. I match each repurchase event with a non-repurchase event by propensity score matching. I define non-repurchases as the firms that do not have any repurchase events in the same fiscal year as the firms with repurchase events. Matched firms are selected based on the nearest propensity score in the entire sample or the same industry as defined by the 2-digit SIC code.

The dependent variable is a dummy variable that equals one if a firm has at least one share repurchase event, and equals zero otherwise. Size is the logarithm of assets. M/B is assets minus the book value of equity plus the the market value of equity, divided by assets. Capital Expenditure is the ratio of capital expenditure to non-cash assets. Leverage is the ratio of long-term debt to assets. Cash Flow is the ratio of income before extraordinary items to assets. R&D is the ratio of R&D to assets. Dividends is the ratio of dividends to assets. Sales Growth is the percentage change in sales over the previous year. Firm Age is the age of the firm. Turnover is the ratio of the monthly trading volume to the total shares outstanding. The The p-value is noted in the parentheses.

	Repurchase=1, Non-repurchase =0
Intercept	-2.820
	(0.01)
Size	-0.037
	(0.01)
M/B	0.023
	(0.01)
Capital Expenditure	1.829
	(0.01)
Leverage	0.351
	(0.01)
Cash Flow	5.958
	(0.01)
R&D	2.950
	(0.01)
Dividend	-5.303
	(0.01)
Sales Growth	-0.123
	(0.01)
Firm Age	0.007
	(0.01)
Turnover	1.932
	(0.01)
Number of Observations	315724
Pseudo R-square	0.05

References

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